



Re-evaluation of coastal cultural heritage Resources Case of Brunswick County, NC

A Dissertation

Sorna Khakzad

Coastal Resources Management
East Carolina University
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Re-evaluation of Coastal Cultural Heritage Resources: Case Study of North Carolina Southeastern Coastal Region

By:

Sorna Khakzad

August, 2016

Director of Dissertation: Dr. David Griffith and Dr. Lynn Harris

Major department:

Coastal Resources Management

ABSTRACT

Humans have had a long history of interconnectedness with the sea and ocean due to the use of natural resources available in the coastal areas. These interactions have influenced the natural landscape and played a crucial role in the formation of coastal cultural heritage. Coastal cultural heritage, a continuum of land and sea, is an important part of our cultural resources in the coastal areas. Presently, coastal cultural heritage has not been well-integrated into coastal management plans as a cultural resource. The values of cultural heritage have theoretically been recognized in benefiting people and its role in sustainable development. However, the qualitative and comparative analysis of coastal management experiences show that many valuable cultural heritage assets have been overlooked as resources in coastal management schemes.

Acknowledging the significance of cultural heritage in Brunswick Country coastal area, the current study addresses three topics: 1) assessment of the impact of natural and environmental factors on coastal cultural heritage and identifying the heritage items that have been marginalized for a variety of different

reasons; 2) considering a new evaluation of a selected marginalized cultural heritage (fishing cultural heritage) and assessing the role of cultural heritage for fishing communities' wellbeing; and 3) finally exploring the feasibility of developing a cultural tourism in Brunswick County directed at fishing communities.

The study applies a multidisciplinary approach for data collection, analysis and evaluation purposes. A synthesis approach is applied and data from different sources on cultural and archaeological resources, and natural-environmental factors are compiled. ArcGIS software is used for analyzing data and creating risk maps for cultural heritage. In addition, several interviews and photo elicitation methods are used for understanding the viewpoints of local fishing communities regarding their cultural heritage resources. Content analysis, a series of graphs and quantitative analysis are applied to understand the state of cultural tourism in Brunswick County on fishing communities.

The result of the first part of study shows that there are several sites that are in potential risk zones. However, more site-specific data are required for better assessment. The second section concluded that fishing communities respect their material culture. There are sites, buildings and objects related to fishing that are of sociocultural significance for fishing communities in Brunswick County. However, many of these items are suffering lack of attention and also abandonment. The study on tourism revealed that although there is interest in visiting fishing heritage, lack of information and proper publicity on fishing cultural heritage resulted in overlooking fishing cultural heritage sites as a tourist attraction.

The study concludes that a balanced integrated and interdisciplinary evaluation of different cultural resources can enhance our understanding of the holistic values of cultural heritage as a resource to benefit people. Passing this understanding to managers and policy makers will help to improve future planning aimed at sustainable development. Better decisions require concrete evidence that demonstrates how re-evolution of cultural capital in regards to different aspects of communities and society can lead to outcomes that improve human well-being in the short and long term. This evidence should combine natural-environmental, cultural, economic, and social data.

**Re-evaluation of Coastal Cultural Heritage Resources:
Case Study of North Carolina Southeastern Coastal Region**

A Dissertation

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Secondary Concentration in Coastal Geoscience

By

Sorna Khakzad

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By:

Sorna Khakzad

APPROVED BY:

DIRECTOR OF
DISSERTATION:
David C. Griffith, Ph.D.

CO-DIRECTOR OF
DISSERTATION:
Lynn B. Harris, Ph.D.

COMMITTEE MEMBER:
David J. Mallinson, Ph.D.

COMMITTEE MEMBER:
Hans Vogelsong Ph.D.

COMMITTEE MEMBER:
Thomas R. Allen Ph.D.

DIRECTOR OF COASTAL RESOURCES
MANAGEMENT PHD PROGRAM:
Siddhartha Mitra, Ph.D.

DEAN OF THE
GRADUATE SCHOOL:
Paul J. Gemperline, Ph.D.

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Chapter 1: Introduction to Dissertation

1.1. Overview

Heritage is “*that part of the past which we select in the present for contemporary purposes, be they economic, cultural, political, or social*” (Graham et al. 2002: 17). According to anthropologists, cultural heritage is the sum total of ways of living built up by a group of human beings and transmitted from one generation to another. World cultural heritage experts are discussing and exploring the role of cultural heritage in sustainable development (UNESCO, the World Bank, European Union and NOAA).

Sustainable development means ensuring dignified living conditions with regard to human rights by creating and maintaining the widest possible range of options for freely defining life plans. The principle of fairness among and between present and future generations should be taken into account in the use of environmental, cultural, economic and social resources (Hardi and Zdan, 1997; Keiner, 2004).

Although there have been several initiatives in different countries to incorporate coastal cultural heritage into holistic management plans (UK, Ireland, Italy), there is still much work to be done in terms of defining and characterizing coastal cultural heritage (JNAPC, 2006; DEFRA, 2009). Nevertheless, there are regulations at different local, national, and international levels to protect and preserve coastal cultural heritage (Santoro et al, 2014). However, a relatively lower level of importance regarding benefits of coastal cultural heritage preservation has been noticed globally (Pinder and Vallega, 2003; Throsby, 2002; 2010; Government response to ODPM Housing, 2004; Reed et al, 2013). In general, there is a grave risk that our natural and cultural coastal heritage will be irreparably damaged by lack of proper consideration in holistic management plans, and, as a result, will close several future development opportunities (LGA, 2002: 14).

Our coastal cultural heritage, when valorized, recaptured and aligned with sustainable development goals (Campbell, 2000), can play a significant role in poverty reduction, livelihood promotion, education, and environmental protection (Vallega, 2003; Pinder and Vallega, 2003; Westerdhal, 2011; Ford, 2011; Campbell, 2000; LGA report, 2002: 14; Khakzad et al, 2015), as well as promoting people's sense of

identity and place attachment, and cultural tourism development (Salmons, 2007; Luchsinger, 2008;). Neglecting or marginalizing historic groups and cultural sites may result in loss of a significant asset to both local communities and external tourist and researcher groups.

Coastal and maritime cultural heritage is crucial in maintaining mutual understanding and cultural exchange among nations, bringing economic benefit, and improving our knowledge on how we have interacted with nature, how the natural environment influences us, and also providing valuable insights into the future. Examples of this heritage can be seen in maritime landscapes and coastal native populations, such as traditional commercial fishing communities, and Native Americans (Ford, 2011a; Ransley, 2011). Coastal heritage encompasses the history of interaction between local communities and the sea, producing a rich multi-cultural maritime landscape with physical manifestations of maritime activities like working waterfronts, shipwrecks, vernacular watercraft, fishing structures, and other assorted remnants of native and immigrant populations (Ford, 2011b). Neglected or marginalized historic groups and sites may be significant to both local communities and external tourist groups. Maritime heritage is a broad legacy that includes not only physical resources, such as archival documents, historic shipwrecks and historic/prehistoric archaeological sites, but also intangible aspects such as oral histories, and traditional seafaring and ecological knowledge of indigenous cultures (Westerdahl, 2011). However, coastal areas are some of the most dynamic and vulnerable areas due to the high level of industrial and urban development and settlement attraction, and the impact of climate change, sea-level rise and coastal processes (Harff et al, 2015; Bailey and Flemming, 2008). These can cause irreversible damage to coastal cultural heritage and loss of part of human history.

The overall objective of this research is to highlight the importance of cultural heritage as a resource in the coastal areas. This research attempts to identify heritage assets that are valuable for people and that can be used as resources for social and economic development purposes. One of the visions of this research is that the outcome can be applied to promote policies and strategies that protect coastal cultural heritage and use cultural resources in line with sustainable development goals. The present study investigates how the coastal cultural heritage of the Southeastern NC can be valorized within the

premises of sustainable development goals for human wellbeing, tourism promotion and long-term preservation of cultural heritage.

1.1.1. An overview of coastal cultural heritage resources in Brunswick County, NC

North Carolina's coast has a fascinating history from the Native American Era, to the first Europeans who made a permanent settlement in the area in 1567, followed by the history of Afro-Americans and immigrants who have left behind many valuable remnants of their settlements, work and life. These remains that consist of the maritime and coastal cultural heritage of North Carolina demonstrate people's ability to live in harmony with nature, qualities common to long-term coastal residents, and history of the region.

a. Native Americans' sites

The North Carolina coastal area has a fascinating Native American history that dates from about 12,000 years ago through the arrival of the first Europeans, who made a permanent settlement in the area in the 16th century, until the 18th century when most of the native populations were disappeared (Sprunt, 1916). Native American archaeological sites include their former habitation sites, burials, sacred or ceremonial sites, places of worship and tradition, and shell mounds which can be seen around Brunswick County. Among the artifacts found in Brunswick County were shells used by Native Americans for different purposes, and stone spear points and arrowheads found during previous excavations in the Cape Fear area (Phelps, 1983; Haas & Swanton, 1948) Most sites observed on the coast have been disturbed by urban and industrial development. Recognition of Native Americans' sites which highlights culturally significant, noncommercial subsistence, cultural and religious uses of such sites within the US Reserve system is consistent with long-term protection of maritime cultural landscape ("About Maritime Heritage | Office of National Marine Sanctuaries", 2016; Gulliford, 1992) (Appendix 1.1 presents an introduction to different laws of importance to Native Americans, and for more information about Native American archaeological sites please see appendix 1.2, as a brief study which author has conducted for better understanding of Native American's heritage in Southeastern NC.)

There have been several Native American archaeological sites, which were excavated or reported around 1960. However, rapid coastal heritage assessment of these sites through sites visits and aerial image comparison analysis showed that due to the lack of concerns or awareness about the importance of these sites, their current state of preservation is not documented and is undefined. At the present time, many sites have been forgotten, destroyed and/or overlooked; the links between the sites and people have been weakened or diminished, and therefore the Native Americans heritage is increasingly endangered.

b. Ethnic groups and Afro-American Cultural Heritage

Tangible and intangible remnants of Afro-American cultural heritage sites are a part of history in North Carolina. The Underground Railway of black slaves in 18th and 19th centuries consisted of a network of people, routes, and safe houses used by black slaves to escape to freedom in the North and Canada¹ (Cecelski, 1994; Bixel and Cecelski, 2002). The Underground Railways have been a focus of study by several cultural heritage organizations such as the National Park Service, National Geographic, Centers for African Americans Studies (such as the ones at Princeton University). Example of these in the mid-1850s are those runaway slaves who enjoyed what petitioners to the governor called a "very secure retreat" in Brunswick County's Green Swamp, then one of the largest swamps in North America. They built at least eleven cabins and carved out a garden and grazing area in the midst of the swamp, as well as enough embattlements that white raiders failed to overrun the camp in the summer of 1856. However, hard evidence of these underground railways is scarce. In addition, intangible African cultural heritage encompasses traditions such as rituals (for example Jonkonnu Festival, marriage and birth ceremonies), and their beliefs (such as recognition of the power of humans to shape their own lives, a holistic understanding that accented communal rather than individual fulfillment, an awareness of the continuity among past, present, and future, and a consciousness of the power to heal contingent on maintaining harmony with other people) (Wilmington Morning Star, 1890; McLoughlin, 1959; and Conser, 2006; Wrenn, 1984; Mulrooney, 1997; Turberg, 1983).

¹ Example: in the mid-1850s runaway slaves enjoyed what petitioners to the governor called a "very secure retreat" in Brunswick County's Green Swamp, then one of the largest swamps in North America. They had built at least eleven cabins and carved out a garden and grazing area in the midst of the swamp, as well as enough embattlements that white raiders failed to overrun the camp in the summer of 1856.

c. Traditional occupations and fishing heritage

Traditional communities such as fishing villages have established a long tradition of fishing and boatbuilding tradition along the coast. For over 200 years, North Carolina's coast supported a successful commercial fishing industry and communities of citizens who relied on the industry for their livelihood (NC Grant, 2007). Southeastern areas of North Carolina still have a large number of fishing communities. Fishing activities are linked to material culture such as boats, fish houses, ship yards, and crafts, as well as rituals and traditions related to fishing and seafaring. These remains are a part of ongoing life tradition and are considered as cultural resources that require management. However, due to changes in the use of resources and land/sea-use regulation and policies, development and climate change, these sites are endangered. Many fishing heritages related sites were abandoned, destroyed and transformed to other functions, without recognition of their cultural values (Conser, 2006; Khakzad, 2012).

Data from the NC State Archaeology Office and the Historic Preservation Office provide general information about the number and state of these sites, but for many sites no detailed information about their state of preservation and/or reason for their destruction/displacement is available. This study relies on the information provided by those two offices, personal communications with the state agents, on-line and aerial photo analysis, and some site observations in Bald Head Island, Varnamtown, Shallotte, Oak Island, Southport and Holden Beach.

1.1.2. Intellectual Merit and Broader Impact

This study offers new interdisciplinary approaches for evaluating coastal cultural heritage and identifies factors that are impacting these heritage assets in southeastern NC. Many coastal areas of North Carolina and Outer Banks have been studied; however, less attention have been given to coastal cultural heritage in Brunswick County, NC. Since this area has seen less development in comparison with many other coastal areas in North Carolina, the ideal goal of this study is that through highlighting the importance of coastal cultural heritage, better measures will be taken and more efficient policy will be designed with the aim of preserving coastal cultural heritage for the benefit of present and future generations. Studying different maritime cultural heritage sites and their value in the present society will

advance our understanding of the role of coastal cultural heritage area as resources for the benefit of local communities and development not only in southeastern NC, but also more broadly.

In short term, mapping the heritage will provide a systematic record and documentation of the cultural heritage of the coastal traditional communities, which can be evaluated for listing as local/national heritage. Cultural heritage documentation will create a new source of knowledge about the present state of these assets in cities, towns and communities. The state of coastal cultural heritage will be evaluated in relation to major factors threatening those cultural heritage sites in order to determine and prioritize cultural heritage which needs urgent attention for protection, preservation or revitalization. The extent to which local communities and public will become more aware of their cultural heritage and different ways to benefit from cultural resources for wellbeing of local communities will be explored.

Furthermore, this research will show the value of integrating different disciplines for conducting interdisciplinary studies and establish a model for future studies in regards to marginal and coastal cultural heritage management.

1.1.3. Chapters synopsis

This dissertation is formed in five chapters. It is comprised of a general introduction, Chapter 1; three individual, but inter-related papers presented in Chapters 2 to 4, and a general conclusion in Chapter 5. An overview of these chapters is as follows:

Chapter 1, **Introduction to Dissertation**, is the current chapter, which provides an overview of the dissertation, its general goals and intellectual merits and broader impact.

Chapter 2, **Assessment of the impact of natural and environmental factors on coastal cultural heritage of Brunswick County, North Carolina**, recognizes that natural and environmental factors, and urban and industrial development have caused damages to, and continue to threaten cultural heritage in different ways. Categorizing the level of threat to these sites and prioritizing actions for their preservation can not only facilitate preserving some sites, but also contribute to our understanding about the past, before these assets are washed away from the coastal areas. Therefore, chapter 2 compiles a baseline inventory and assessment of the state of coastal cultural heritage in the coastal towns and islands of

Brunswick County. The study in chapter 2 provides an overview of the natural and environmental factors impacting coastal cultural resources in Brunswick County. Major factors that are impacting coastal cultural heritage are identified and through analyzing the existing data risk maps for cultural heritage have been presented. This chapter employs a synthesized approach and superimposes several sets of data that are available on cultural heritage resources, and natural-environmental factors. In this chapter the trends and patterns in existing data are investigated. The limitation and challenges that affect research and decision-making based on the available data are discussed. As a result of this paper a set of marginalized heritage assets—fishing cultural heritage—have been selected to be evaluated in the next chapters.

Chapter 3, **The role of fishing material culture in communities' sense of place as an added-value in management of coastal areas**, addresses and analyzes the sociocultural value of fishing cultural heritage in fishing communities. Based on the anthropology of landscape, the beach is seen by locals and fishermen as a landscape located in between the sea and the town that is both mobile and abstract. It is filled with significance by people who use it. Fishermen have a shared sense of identity and place attachment since their livelihood in some way is related to the sea (European Commission, 2006). Place attachment is an indicator of well-being. Evaluation of the sociocultural significance of these places is a way to market the vernacular; simulate the authentic, and invent or preserve heritage and tradition. This section investigates the significance of traditional fishing working waterfronts and the material culture for the fishermen in preserving a sense of community and place attachment. The cultural heritage elements that are proved to be of value for the members of fishing communities are evaluated for cultural tourism promotion in Chapter 4.

In Chapter 4, **Coastal cultural tourism promotion for supporting cultural communities**, promoting cultural tourism on traditional fishing in Brunswick County is investigated. Based on the results from the previous chapter, chapter 4 studies the level of interest and reverence that tourists have towards fishing cultural heritage. The present study of coastal cultural heritage in Brunswick coastal area provides an insight to the symbolic and socio-cultural significance of fishing-related tangible and intangible heritage that can be used for cultural tourism development. This paper identifies the types of cultural heritage those are valuable for tourism promotion, and assesses whether cultural tourism, directed at fishing

communities and their maritime heritage as an authentic type of tourism, is appealing for tourist attraction. This study concludes that fishing cultural heritage is an appealing attraction for cultural tourism promotion, and that providing information and education on these heritage items can promote fishing cultural tourism. Finally, the study provides a series of steps for policies in order to promote fishing cultural tourism in Brunswick County.

Chapter 5, **Conclusion**, provides a general conclusion of the three main chapters (2, 3, and 4) and presents suggestions for developing policies for better management of coastal cultural heritage. This chapter also highlights the areas that need more research in the future.

1.1.4. A structured overview of the dissertation

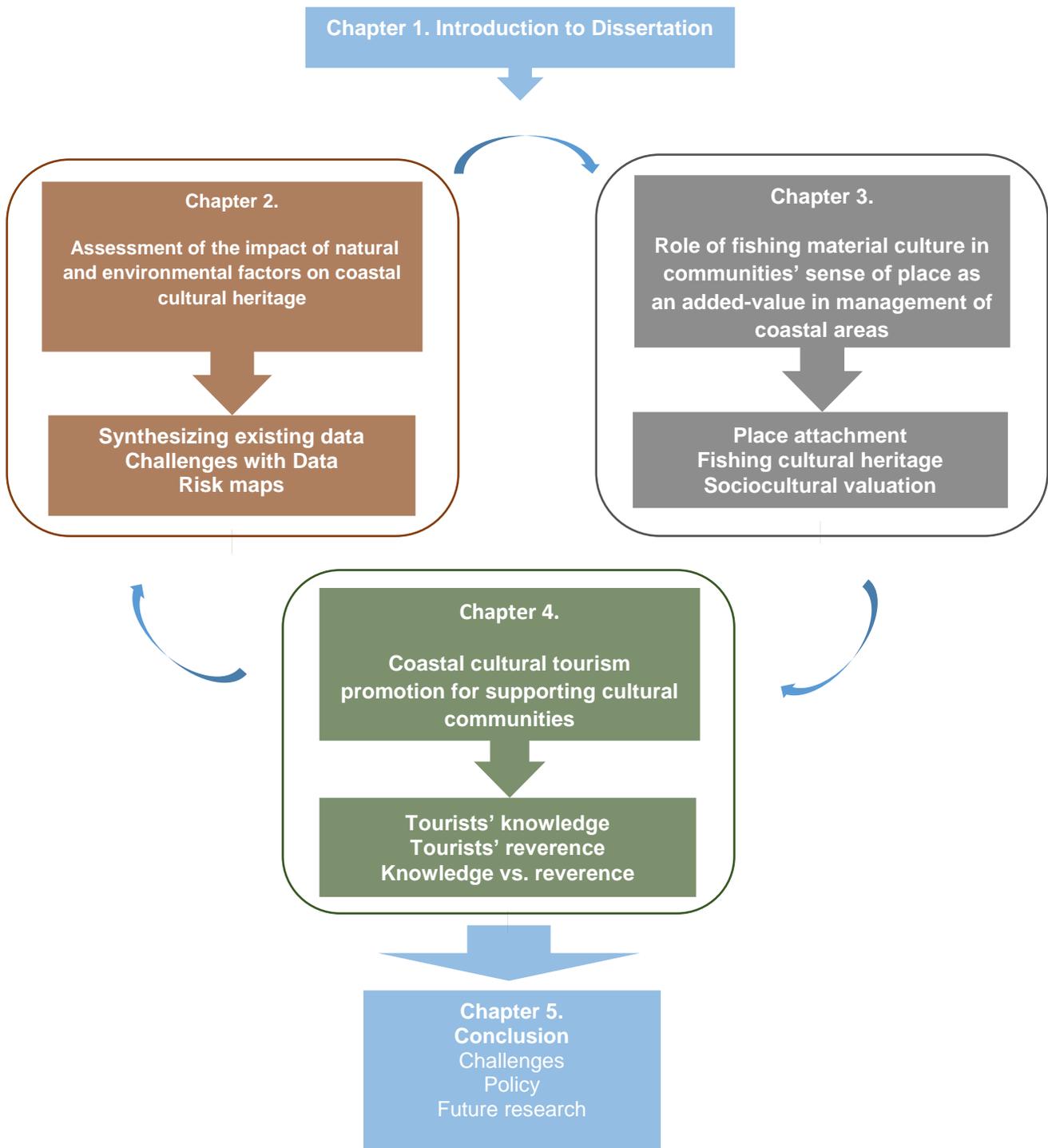


Fig. 2.1: Structured overview of the dissertation

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Appendices

Appendix 1.1: Law and regulations

The following is an annotated list of commonly used Historic Preservation Laws, Regulations and Executive Orders of importance to Native Americans.

Federal Laws

American Indian Religious Freedom Act of 1978, as amended (AIRFA) [42 U.S.C. 1996]

AIRFA states that it is US government policy to respect the inherent right of American Indians, Alaska Natives, and Native Hawaiians to practice their traditional religions. This has been interpreted by the courts to mean that Federal agencies must consult with Indian tribes and Native Hawaiian organizations concerning projects the agencies propose to undertake that may affect traditional religious practices, as well as places and sacred objects used in religious practices. It does not give these groups a veto over agency actions, but does require that agencies consult with them and pay attention to their religious concerns.

Archeological and Historic Preservation Act of 1960, as amended (AHPA) [16 USC 469]

Also called the Archeological Data Preservation Act (ADPA), AHPA requires Federal agencies to recover Archeological, historical, and scientific data that may be threatened by construction projects or other related actions undertaken, assisted, or licensed. It also requires pre-project surveys to identify such data. AHPA does not provide specifically for consultation with Indian tribes or Native Hawaiian organizations.

Archeological Resources Protection Act of 1979, as amended (ARPA) [16 U.S.C. 470aa-470mm]

ARPA prohibits people from excavating, removing, or defacing Archeological resources on Federal and tribal land without a permit issued by the responsible land management agency. Permits are issued in accordance with regulations issued jointly by the Departments of Agriculture, Defense, and Interior, and the Tennessee Valley Authority. Federal agencies must consult with Indian tribes and Native Hawaiian organizations before issuing such permits. Archeological resources are defined as places and items that are of Archeological interest and over 100 years old.

Endangered Species Act of 1973, as amended (ESA) [16 USC 1531-1544]

ESA provides a program for the conservation of threatened and endangered plants and animals and the

habitats in which they are found. The law requires Federal agencies, in consultation with the US Fish and Wildlife Service and/or the NOAA Fisheries Service, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife. Likewise, import, export, interstate, and foreign commerce of listed species are all generally prohibited.

National Environmental Policy Act of 1970, as amended (NEPA) [42 U.S.C. 4321-4347]

NEPA establishes a government-wide policy to protect the human environment and treat it with respect. Together with 40 CFR 1500-1508 (Protection of the Environment), NEPA requires Federal agencies to consider the environmental impacts of any actions they propose to undertake, assist, or license.

National Historic Preservation Act of 1966, as amended (NHPA) [16 usc 470]

NHPA establishes a government-wide policy favoring the responsible use of historic properties, defined as places included in or eligible for the National Register of Historic Places. The following sections of NHPA are of special importance to Native Americans:

1. Section 101(d). Provides a vehicle for Indian tribes to enter into agreements with the National Park Service under which they may take on the functions of State Historic Preservation Officers (SHPOs) within the exterior boundaries of an Indian reservation and appoint a Tribal Historic Preservation Officer (THPO) to carry out these functions. In addition, Section 101(d)(3) authorizes grants to THPOs and Section 101(d)(6) states that places of religious and cultural significance to Indian tribes and Native Hawaiians may be eligible for inclusion in the National Register of Historic Places. Federal agencies are required to consult with Indian tribes and Native Hawaiian organizations about the treatment of such places under Section 106.
2. Section 106. Requires Federal agencies to consider the effects of proposed actions on historic properties. This includes actions they propose themselves and those they propose to assist or license. 36 CFR 800 (Protection of Historic Properties) outlines how agencies are to consult with State and Tribal Historic Preservation Officers and other

interested parties, identify historic properties, determine whether and how such properties may be affected, and resolve adverse effects.

3. Section 110. Requires Federal agencies to identify and manage historic properties under their jurisdiction and control, encourage the preservation of non-federally owned historic properties, discourage the destruction of historic properties, document historic properties that must be damaged or destroyed, maintain historic preservation offices, respond to comments by the Advisory Council on Historic Preservation, and consult with Indian tribes and Native Hawaiian organizations, preservation authorities, and others in carrying out agency activities. Section 110 also authorizes the inclusion of historic preservation costs as eligible project costs in Federal and federally assisted projects.
4. Section 111. Requires Federal agencies to seek adaptive uses for historic properties under their jurisdiction or control that cannot be used for agency purposes. It authorizes out leases and exchanges of property as ways of making these properties available for public use. Section 111 may be used by Indian tribes and Native Hawaiian organizations to acquire the use of federally owned historic buildings and structures.

Native American Graves Protection and Repatriation Act of 1990, as amended (NAGPRA)

[25 U.S.C. 3001–3013]

NAGPRA requires Federal agencies and institutions receiving Federal funding to identify Native American cultural items (human remains, funerary objects, sacred objects, and objects of cultural patrimony) under their control. It also provides lineal descendants, Indian tribes, Alaska Native villages, and Native Hawaiian organizations a process through which to request that cultural items be repatriated. In addition, NAGPRA requires work stoppage and various forms of coordination and documentation when such items are unearthed on Federal or tribal lands. 43 CFR 10 (Native American Graves Protection and Repatriation Act Regulations) governs the implementation of NAGPRA.

Religious Freedom Restoration Act of 1993 (RFRA) [42 USC 2000bb - 2000bb-4]

RFRA prohibits Federal agencies from substantially burdening any person's practice of religion, unless doing so meets a compelling government interest and the means of doing so is the least restrictive way of meeting that interest. Courts have prescribed varying standards for what constitutes a substantial burden

on the practice of religion. Under RFRA, people who practice traditional Native American religions have the same rights as those who practice other religions.

Executive Orders

E.O. 12898, Environmental Justice, February 11, 1994

Requires that Federal agencies avoid having disproportionate adverse environmental impacts on low-income populations and minority communities. Impacts may include effects on the cultural environments of these populations and communities. Both Federally recognized and non-recognized tribes as well as Native Hawaiian communities may be “environmental justice” communities.

E.O. 13007, Indian Sacred Sites, May 24, 1996

Requires that Federal agencies seek to avoid adverse effects on Indian tribal sacred sites located on Federal or tribal land, and on tribal access to such sites. Sacred sites are identified by Indian tribes, but are required to be discrete and bounded. Tribal religious practitioners are identified by tribal governments.

E.O. 13175 Consultation and Coordination with Indian Tribal Governments, November 6, 2000

Affirms the Federal government’s commitment to a government-to-government relationship with Indian tribes, and directs Federal agencies to establish procedures to consult and collaborate with tribal governments when new agency regulations would have tribal implications.

Government-wide Regulations

36 CFR 79, Curation of Federally-Owned and Administered Archeological Collections

Regulations issued by the National Park Service for the curation and care of federal Archeological collections required by ARPA, NHPA, and the Reservoir Salvage Act. Included in the regulations are standards for determining a repository for Archeological collections and guidelines for acceptable access, loans, and collections use.

36 CFR 800, Protection of Historic Properties

Regulations issued by the Advisory Council on Historic Preservation governing implementation of Section 106 of NHPA. The regulations generally require:

1. Early and continuing consultation with tribes, NHOs, THPOs, SHPOs, and other interested parties
2. Identifying historic properties subject to possible effect by proposed projects

3. Determining how such properties may be affected
4. Negotiating agreements about how such effects will be resolved or mitigated
5. Implementing such agreements

40 CFR 1500-1508, Protection of the Environment

Regulations issued by the Council on Environmental Quality governing implementation of NEPA. The regulations generally:

1. Allow agencies to establish categorical exclusions that require little or no NEPA review, but must be screened for extraordinary circumstances that require additional review
2. Provide for Environmental Assessments (EAs) to determine whether projects may have significant impacts on the quality of the human environment
3. Require Environmental Impact Statements (EISs) on projects that may have significant impacts on the environment
4. Results of NEPA review are to be considered by Federal agencies in making project decisions

43 CFR 10, Native American Graves Protection and Repatriation Act (NAGPRA) Regulations

Regulation issued by the National Park Service governing the implementation of NAGPRA. The regulations require Federal agencies and institutions that have received Federal funds to:

1. Inventory their holdings to see if they contain Native American human remains or cultural items, and determine whether they have a right to own such remains and items
2. Identify Indian tribes and Native Hawaiian organizations with cultural affiliation to such remains and items
3. Subject to negotiation, repatriate such items to tribes and Native Hawaiian groups

The regulations also prescribe rules for developing Plans of Action and Comprehensive Agreements for dealing with Native American human remains and cultural items found on Federal and tribal lands.

Appendix 1.2: Native Americans' archaeological reports review

Previous research and literature review on Native Americans' cultural and archaeological sites:

(This study were used while conducting rapid coastal assessment for re-identification of some Native Americans' sites.)

Recognition of Native Americans sites which highlights culturally significant, noncommercial subsistence, cultural and religious uses of such sites within the US Reserve system is consistent with long-term protection of maritime cultural landscape.² One aspect of this recognition is to work with the Native community to learn more about the cultural significance of this region. However, Native Americans have long left this area and they can be mostly traced in New York. There has been quite considerable amount of excavation and archaeological study on the Native Americans sites in the southern areas of NC especially in 1960s. Additionally there is some information available from the first European arrivals to the area that can help in identifying possible Natives' sites.

Brunswick County was formed on 1764 from parts of Bladen County and New Hanover County. It was named for the colonial port of Brunswick town (now in ruins), which was itself named for Duchy of Brunswick-Luneburg; at the time held by British kings of the House of Hanover. The small Native Americans presence in the county is remnants of the Lake Waccamaw Siouan Tribe and surnames such as Campbell, Graham, Jacobs, Blanks, and Mitchell are among the Native American Population.

This part of the study attempts to present the known sites and their state of preservation. In addition, following field study and interviews, it is expected to collect more information from the location of presently unknown sites. There archaeological evidences of occupation by Native Americans along the shores of the Cape Fear River from prehistoric to colonial era³. The Cape Fear River vicinity is located within the South Coastal region (Phelps 1983:16).

² <http://sanctuaries.noaa.gov/maritime/cultures.html>

³ Within the Coastal Plain, follows temporal divisions similar to those established by archaeologists for the eastern United States: Paleo-Indian (12000 - 8000 B.C.), Archaic (8000 - 1000 B.C.), and Woodland (1000 B.C. - A.D. 1650). Each temporal division is distinguished by the climate, technology, and subsistence patterns characteristic of the period. The Coastal Plain physiographic province can also be divided into two cultural- spatial units, the North

An overview of the archaeological periods and the hints for distinguishing sites:

The Paleo-Indian period of eastern North Carolina is the earliest and least known of the cultural divisions. Based on the archaeological studies, at the time of their occupation during the Paleo-Indian period, the sites would have been located on the Inner Coastal Plain (Phelps 1983:20). The environment of the Coastal Plain during the Paleo-Indian period was one of broad river valleys with braided stream channels around numerous sandbars, freshwater marshes along the stream edges, and a boreal pine-spruce forest on the inter-stream uplands (Whitehead 1972:313). With the retreat of the last glaciers, the sea level rose to near its present level, inundating coastal sites. Therefore, it is expected that many of the Paleo-Indian sites are underwater at present. The Paleo-Indian settlement patterns consist of short-term-activity sites and longer-utilized base camps. Expected material to determine these sites can be lithic materials for tool manufacture, such as quartz, slate, rhyolite, chert, and jasper, which were brought down from the mountains and Piedmont areas by river currents (Phelps 1983:21). To find these sites it is important to know that factors that influenced site location included access to water, habitats favorable to game, and sunlight exposure (Thompson and Gardner 1979:23). Therefore, utilizing the reconstructed environmental and geomorphological maps from that period can help in predicting the location of such sites. Archaeologically, the Paleo-Indian period is most readily identified by a distinctive form of fluted projectile point. Paleo-Indian sites on the low-lying Coastal Plain may presently be invisible, having been inundated by rising sea levels or deeply buried in floodplain soils.⁴

The Archaic Period (8000 - 1000 B.C.) is the second major division of eastern United State. With the change in climate following the glaciation, better efficiency and success in exploiting the local resources resulted in a slight increase in human population.

Archaic sites found within the Coastal Plain are higher than for any other prehistoric period. Those sites can be found in all microenvironments, from saline estuary shores to stream margins and their tributary systems, as well as pocosins and floodplain swamps. There is a strong relationship between site location

Coastal and South Coastal regions, based upon cultural differences that appear to begin near the end of the Late Archaic period.

⁴ Rodney M Peck (2010). The Williamson Paleo Indian Workshop Site, Dinwiddie County, Virginia. Originally Published in the Central States Archaeological Journal, Vol. 57, No. 1, pg. 45.

and accessibility to streams. Surveys that have documented Archaic sites in the Coastal Plain indicate that the majority of sites represent short-term-activity localities evenly distributed along streams. Fewer base camps, found near the confluence of major streams, may indicate seasonal utilization of available resources. Most sites, however, are found in the inner Coastal Plain, which may in large part result from burying, or inundation, of sites similar to those of the earlier period. Stratified Archaic sites are scarce but probably do exist in select undisturbed areas within the inner Coastal Plain (Phelps 1983:24). From this period, different types of lithic spear-point from the Paleo-Indian were identified. Other lithic tools, such as scrapers, blades and drills used for the processing of bone and hides, are also identifiable to the Archaic Period (Phelps 1983:23).

Warmer and drier climate marks the beginning of Archaic (5000 - 3000 B.C.) sub-period. The number of habitation sites increased slightly from the Early to Middle Archaic. Lithic point types experienced a transition in shape, while other new types appeared. In addition, polished stone and semilunar spear-thrower weights also appear for the first time. Change in lifestyle from nomadic to developing societies was the termination point for the Middle Archaic terminated and was the beginning of the Late Archaic (3000 - 1000 B.C.). The expected artifacts from this period are steatite (soapstone) vessels for cooking and storage, as well as fiber-tempered ceramic wares (Phelps 1983:26). Site diversity appears to have remained relatively stable into the Late Archaic, but some localities show a noticeable reduction of Late Archaic site density along smaller tributary streams (Phelps 1983:25).

The Early Woodland Period (1000 - 300 B.C.) follows the same settlement pattern. Lithic projectile points are of the small-stemmed variety, considered transitional from an older Archaic type (Phelps 1975:68). From the beginning of the Woodland Period, culture of the South Coastal region is presumed to be Siouian territory, while the North Coastal region is Algonkian and Iroquoian territory with the language and customs distinctive to each region (Phelps 1982:37, 47).

Mount Pleasant for the North Coastal region and Cape Fear for the South Coastal region are the phases of the Middle Woodland Period (300 B.C. - a.d. 800). However, the Cape Fear phase is less well known than the Mount Pleasant phase. Sedentary villages represent the largest single settlement type of the

period. For the Middle Woodland period ceramics are one of the materials to distinguish the sites. In addition, low sand burial is another element to distinguish Natives sites of this period in the South Coast.

Late Woodland (AD. 800-1650) people were Siouian-speaking Waccamaw. Cape Fear tribes occupied the South Coastal region at the time of European contact. The settlement pattern during the Late Woodland was relatively dispersed, with site locations found along the sounds, estuaries, major rivers, and their tributaries. Most of the sites that occurred away from the barrier islands are found adjacent to streams or other bodies of water on high banks and ridges of sandy loams. Types of sites include capital villages (chiefdoms), villages, seasonal villages, and camps for specialized activities, as well as farmsteads likely occupied by extended families. Except for the camps, which appear to be directly related to seasonal gathering of shellfish, fishing, and perhaps collecting, all seasonal and larger villages are located where agriculture, hunting, gathering, and fishing could all be accomplished within the site catchment area (Phelps, 1983: 39- 40). The Indian tribes traditionally associated with the coastal area of southeastern North Carolina at the time of European contact were the Cape Fear and Waccamaw (Swanton 1946:103, 203; South 1960:9). Other, less prominent, tribes included the Woccon, Saxapahaw, and Warrennuncock.

The village of Necoos was probably the Cape Fear tribe that encountered the first Europeans who attempted to settle along the Cape Fear River in the 1660s about 20 miles from the mouth of Cape Fear River, probably in Brunswick County. In 1715 five villages were reported. One of the places visited and recorded by the colonist was Big Island, in the Cape Fear River (Judah, 2008: 9). By 1715 statistics documented only about 206 Cape Fear Indians in five towns along the river. Within a few years the Cape Fear Indians fled the area, never to return (Judah, 2008). In 1717 the tribe had moved south of Black River (Swanton 1946:103). By 1808, only about 30 Indians were known to be in the Cape Fear area

Archaeological and historical evidence further indicates that some Indians continued to exist in the Cape Fear region until the early nineteenth century. By 1808 only one identifiable member of the Cape Fear Indians survived (South 1960:12, 61; Sprunt 1992:14; Swanton1946:103). By the mid-nineteenth century the last of the historic native population had disappeared, and only their modern-day descendants in South Carolina and western North Carolina, along with the archaeological remains of their settlements,

remained. "Large mounds of oyster-shells, many pieces of broken wicker pottery, arrow-heads, and other relics of the red men are still found on the peninsula below Carolina Beach. The studies from 1978 indicates that archaeological evidence from those past inhabitants can still be found along the shores and tributaries of the Lower Cape Fear River (South 1960; Wilde-Ramsing 1978). However, if they are still there at present time, in 2014, is a question that need more investigation.

Natives that we call the Cape Fear Indians originally inhabited Brunswick County. Some southeastern NC Indians left behind remnants of their existence, which can be seen today in local museums. The NC Maritime Museum in Southport displays a 2000-year-old Indian canoe fragments, and other treasures from local shipwrecks. These artifacts help preserve the Native American lore of Brunswick County. From what is known from archaeological research, the late Cape Fear tribes lived in farm communities in scattered locations. The towns had communal fields that the men planted and the women tended. Their homes were a dome shaped cabin or wigwam, made of a pole frame and covered with bark. The ground was the floor. A hole in the roof permitted smoke from a fire to escape. Some of these homes were located on the south side of the mouth of Town Creek and another known on Smith Island. Native Americans used Bald Head Island in much the same way that it is used now, as a seasonal retreat. Bald Head Island's creek estuaries and its abundance of shellfish were probably as attractive to Native American fishermen as they are to modern fishermen. Shell mounds found on Middle Island and Bluff Island indicate that Native Americans did visit the Smith Island complex, but disease and war killed off most of the Native American population, so it is difficult to know much about the original inhabitants (Stick, 1985).

Several burial grounds are known to exist in the Brunswick County/southeastern Carolina areas, although many have been rampaged and destroyed by vandals over the years. Some of these burial grounds were documented in Southern Indian Studies project in the early 1960s before the majority of the vandalism occurred and population numbers grew.

Excavation from 1960s by Stanley South identified over 300 historical site ranging from early Archaic to the Historic period. He also identified McFayden Mound (burial site) in Brunswick County. South: "The McFayden mound is located on a natural sand ridge, and can be seen only as a small rise above the

surrounding area. The position of the mound can be seen, however, by the presence of a group of holes dug over a forty-foot (2f high) area, around which quantities of human bones can be seen. Only two or three sherds have been found among these bones on the surface.” ... The supposed village was probably located in the bottomlands, nearer the streams.

Some examples of the sites in Cape Fear area

1. A level area, several acres at the south end of Myrtle Sound, is an Indian settlement with pottery fragments plentiful between oyster and clamshells, which are scattered over surface.
2. A large shell heap in which pottery fragments occurs is several miles northward, on the norther band of Barren Inlet Creek, about ½ mile from the sound. There are signs of a large settlement, possibly 4-5 acres, strewn with Indian pottery.
3. Three miles north of Forth Fisher, less than 100 yards from the beach, are three small mounds about 30 inches high and about 20 feet in diameter.
4. Sugar Loaf, less than one mile from the previous mounds, in northwesterly direction, and contains three more small mounds, probably the last Indian settlement in the area. This is the location where the Coree Indians once camped and made forays upon the plantation of Orton and Kendal and who were destroyed by Roger Moor.

Nathan Henry archaeologist: Any high ground overlooking the sound or river with nearby fresh water source would have been occupied temporarily at some time—usually many times.

In New Hanover the following locations are listed in as archaeological sites at the NC Office of State archaeology:

Another Indian Burial ground is located west of the Gause Landing Road area, off highway 179 in the Ocean Isle Beach area. Two Indian burial locations are identified as being in the Silver Hill area off Holden Beach Road where, reportedly Chicora Indians had burial mound, long since destroyed by vandals.

An Indian burial ground is reported to be located just off highway 211 just past the Lockwood Folly River Bridge. Although unidentified and not yet located, this is a probable location, on the river, for former Indian villages and burial grounds. Not far from this this Holden Beach area, it is said that in Woody

Fulford family land they found Indian arrowheads and pottery sherds. On what was to become Tuscarora Lane and Cherokee Road, near the current causeway of Holden Beach. It was thought to be from a former Indian settlement. The Indian Trail Tree in Keziah Memorial Park, in Southport, is about 800 years old, used by Cape Fear area Indians.

At the present location of Sunset Harbor Fishing Club, when the building was built and foundation was dug historic Indian pottery was found. (400 BC to AD 1000).

Conclusion:

After the archaeological studies in 1960s, there have been many changes in the area of the southern North Carolina coast through industrial and urban development. In addition, natural factors could have caused environmental changes. Also, since the native populations are absent from the area, the social links between them and their heritage seems to be weakened and therefore, there is no strong sense of native heritage preservation exist in the area.

According to several acts, such as the Archeological Resources Protection Act of 1979, National Historic Preservation Act of 1966 and Native American Graves Protection and Repatriation Act of 1990, Native Americans' heritage is valuable not only for the native populations, but also for the whole nation and contributes to our understanding of people who lived for a long time in America continent. Studies show that the Native Americans heritage sites are still valuable for the remaining Natives ("Nooherooka", 2016).

Chapter 2: Assessment of the impact of natural and environmental factors on coastal cultural heritage of Brunswick County, North Carolina

Abstract: Coastal cultural resources provide crucial links to the past, are important centerpieces for interwoven maritime heritage community narratives, and are valuable cultural resources. Similar to many other places in the world, in southeastern NC, natural and environmental factors such as storms, erosion and urban and industrial development have caused damage to, and continue to threaten, cultural heritage in different ways. Categorizing the level of importance of these sites and prioritizing actions for their preservation can not only facilitate preserving some sites, but also contribute to our understanding about the past, before all these assets vanish from coastal areas. However, a full understanding of the different factors that impact different cultural assets does not yet exist. In order to prioritize our actions regarding cultural heritage preservation, cultural tourism promotion, and preserving sense of identity and place for coastal communities, a thorough study on the impact of natural and environmental factors on coastal cultural heritage is necessary. The present study provides an overview of the natural and environmental factors impacting coastal cultural resources in Brunswick County, North Carolina and assesses the potential level of impact of these factors on different sites. Data for this study have been collected from different sources. A mixed research synthesis which includes a systematic review of literature and previous experiences, and various data analyses resulted into new knowledge about the state of coastal cultural heritage in Brunswick County. For mapping and analysis, ArcGIS and spatial analysis are applied. The result is a set of risk maps for coastal cultural heritage in Brunswick County that can assist managers and policy makers to prioritize their actions regarding conservation, preservation and management of coastal cultural heritage and to develop policies for coastal cultural resources management.

2.1. Introduction

Coastal cultural resources, including maritime and coastal cultural heritage, play important roles in sustainable development for poverty reduction, livelihood promotion, education, and environmental protection (Vallega, 2003; Pinder and Vallega, 2003; Westerdhal, 2011; Ford, 2011; Campbell, 2000; LGA report, 2002: 14; Khakzad et al, 2015), and help to promote people's sense of identity and place

attachment (Salmons, 2007; Luchsinger, 2008). Studies in different parts of the world (e.g. North Carolina, USA, Australia, and New Zealand) show that in many instances, cultural heritage has been neglected in holistic management plans and results in loss of local, national and sometimes international cultural values that can benefit people in different ways (Khakzad et al, 2015; Jacobson, 2012; Khakzad, 2012; Cummins et al., 2010; Commonwealth of Australia, 2006; Bone, 1997; AIMA, 1994).

Considering that there is a wealth of coastal cultural heritage in North Carolina, but many marginalized or/and in danger of deterioration, the present research focuses on Brunswick County in North Carolina as a project to offer a method for re-evaluation of coastal cultural heritage, not only for the sake of heritage assessment and preservation, but also for the benefit of people. Brunswick County's coastal area covers an important range of cultural heritage from the time that Algonquian tribes occupied the area during the time of European's encounters (Vrana and Schornack, 1999; NOAA, Maritime Heritage Program, 2013; Gulliford, 2000), to Afro-American cultural heritage sites⁵ (Cecelski, 1994; Conser, 2006; Wilmington Morning Star, 1890; McLoughlin, 1959), in addition to many more cultural and archaeological sites, including present traditional communities, such as fishing communities.. All these cultural assets compose the maritime cultural heritage in Brunswick County.

Several sets of data from diverse categories of cultural heritage sites, such as archaeological sites, and historical sites, are available through different sources including the Office of State Archaeology, State Historic Preservation Office, National Park Service, NOAA, and the ECU archive. However, no comprehensive assessment of their state of preservation and vulnerability for these sites has been done. No study to assess the impact of natural and environmental factors on Brunswick coastal cultural heritage have been conducted. Therefore, it is difficult to prioritize actions for preservation and future management of coastal cultural heritage in Brunswick County. In the long run this will result in more loss of coastal cultural heritage resources. The challenges faced by coastal resources managers, such as the lack of data identifying important cultural heritage sites. The status of preservation, inadequate knowledge of the

⁵ Example: in the mid-1850s runaway slaves enjoyed what petitioners to the governor called a "very secure retreat" in Brunswick County's Green Swamp, then one of the largest swamps in North America. They had built at least eleven cabins and carved out a garden and grazing area in the midst of the swamp, as well as enough embattlements that white raiders failed to overrun the camp in the summer of 1856

type and magnitude of threats, and public awareness has been highlighted by many experts (De la Torre, 2002), and as Barr 2014, states “...*increasing knowledge of the presence, status, and threats to heritage resources in these maritime landscapes is an essential and important first step.*” (Personal communication with Dr. Brad Barr, Senior Policy Advisor, NOAA/ONMS, 21 Aug. 2014)

The objective of this chapter is to identify the major natural factors that can impact coastal archaeological and cultural sites, in order to prioritize heritage preservation actions. In order to have a thorough knowledge for preservation and management of coastal cultural heritage, a wide variety of data and expertise from different fields, such as natural and social sciences, is necessary (NPS, 2014). This paper explores how knowledge of geological and geomorphological processes can provide an understanding of natural hazards and risks that are threatening coastal cultural heritage areas. The goal is to implement a procedure for observing and quantifying the risks threatening coastal archaeological and cultural heritage. This involves a multidisciplinary approach based on the integration of various data and methodologies within archaeology, history, geology and sedimentology, geography, geomorphology, and the social sciences (Daire et al, 2012). The research synthesizes the existing cultural heritage and natural-environmental data. Synthesizing the existing data provides a better understanding of the natural and environmental factors impacting coastal cultural heritage of Brunswick County, as well as assessing the suitability of the present data for cultural resource management purposes. The outcomes are risk maps that provide information on sites which are potentially located in hazardous zones. This information can help to develop management strategies for better protection and stabilization of cultural heritage sites, aiming at long-term heritage sustainability.

2.2. Overview of worldwide approaches

Initiations and actions in relation to the coastal and underwater heritage in different parts of the world, such as Rapid Coastal Zone Assessment Surveys (RCZAS)⁶ that enhance the National Monuments

⁶ ‘Rapid Coastal Zone Assessment’ is a qualitative method for assessment coastal areas. Application of this method for assessment of coastal cultural heritage and prioritizing the preservation activities has effectively been applied by English Heritage (now Historic England) for coastal management This assessment can comprise of a combination of site visits/surveys and desk based assessment including reviewing the existing reports and data, and examining aerial images and photos from the sites. This method has been applied for assessment of coastal cultural heritage in some other countries such as Belgium and Ireland. (<https://www.historicengland.org.uk/advice/planning/marine-planning/rczas-reports/>).

Record (DEFRA, 2006; English Heritage, 2006; English-heritage.org.uk, 2015; Murphy, 2014); and Historic Environment Records (HERs) (English-heritage.org.uk, 2015a), showed that such studies can promote conservation of heritage assets and prioritize actions in coastal zones (Khakzad, 2015). Since 1997, English Heritage (Great Britain) has commissioned a number of Rapid Coastal Zone Assessment Surveys (RCZAS) in response to rising sea level, increasing coastal erosion, and the loss of important foreshore environments (EH 1997, 2003, 2006; Paddenberg and Hession 2008; Wessex Archaeology, 2011).

In Southeastern Europe and the Mediterranean Basin, the objectives of the transnational ARCHI-MED (Archiplago Mediterraneo, Interreg III B) program since 2000 have been to assess the improvement, conservation, and promotion of both natural and cultural environments ("Interreg :: Archimed - Home", 2016). Other European projects are more specifically dedicated to heritage, with Greek and Italian Risk Maps serving to raise awareness of the preservation of monuments threatened by climate change. The "No'e Cartodata: carte de risque du Patrimoine" sub-project (Interreg IIIC, Mediterranean and southern Europe area, since 2006), for example, aims to foster interdisciplinary discussion about the improvement of methodologies (e.g. documentary tools and geographical information) dedicated to the protection of cultural heritage in the face of natural hazards. Belgian projects such as SeArch (Sea Archaeology: Archaeological Research of the Belgium Part of the North Sea, 2013-2016) aimed at developing criteria for assessment of coastal cultural heritage sites and studying the impact of geological factors on heritage assets (Sea-arch.be, 2015). Studies funded by the European Union, such as SPLASHCOST (Submerged Prehistoric Landscape of the Continental Shelf, 2009-2013) (Splashcos.org, 2015) through studying and understanding of impact of geological and natural-environmental factors on the continental shelf, especially sea-level rise, provided a vast knowledge on coastal archaeological and cultural heritage and the natural and environmental factors impacting European Coastlines (Bailey et al, 2012). These studies showed that many factors impact coastal cultural heritage (Erlandson, 2008) and the cooperation between heritage specialists and natural scientists not only leads to new discoveries and knowledge about cultural heritage and archaeological sites, but also enhances our knowledge about climate change and sea-level rise (Maarleveld, 2009).

Since there are different levels of information available on the coast in Brunswick County, in order to gain a better knowledge about the general condition of coastal cultural heritage, first, a rapid coastal zone assessment was conducted on heritage assets in Brunswick County. The rapid coastal zone assessment showed that many heritage sites in North Carolina have been marginalized and suffering from the impact of natural and environmental factors, such as erosion by storms, sedimentation and urban development (Khakzad, 2012; Lynn et al, 2015). Considering the presence of heritage assets either protected by a variety of legislative measures, or valued due to their socio-cultural significance for local communities and the existence of threatening factors, national governments must develop frameworks to conserve and protect their heritage assets (Department for Communities and Local Government, 2012; National Acts, 1999). This task requires strategies supported by the value assessment and condition evaluation, and prioritization based on sites' risk assessment. In practice, this will require ranking the potential impact of different anthropogenic and natural factors on individual heritage assets and determining their vulnerability, sensitivity and resilience to future change (Howard, 2012).

2.3. Factors impacting coastal cultural heritage

Studies, in general, summarized several natural and anthropogenic factors that potentially affect cultural heritage assets in a negative or positive way. Some of these factors include infrastructure, traffic/frequency of passage, types of activities, coastal defense, biological erosion, weathering and erosion, resistance of the remains, resistance of the local substrate, physical protection, legal protection, and proximity to naturally hazardous elements (water, cliff, etc.) (Dair et al, 2012; Hassler 2006; Rowland 2010; Rowland and Ulm 2012). The present study focuses mainly on natural-environmental factors. Coastal cultural and archaeological sites, whether on the surface, buried, or underwater, are located within a complex matrix of sediments, soils, and landforms, and are under the constant attack of waves, tides, wind, storms and beach erosion (Roberts and Trow, 2002; UNESCO, 2008; McVey and Erlandson, 2012; Emanuel, 2005; Webster et al, 2005; Elsner et al., 2008; Neu, 2008; Knutson et al., 2010; Srivastava et al. 2005; Bruun, 1983; 1962; Flemming, 1998; Martin and Parris, 2007). The impacts that local geological conditions, geomorphological processes and climate change can bring on heritage assets have been documented across a number of countries and their coastlines (Murphy et al, 2009; UNESCO, 2008; Pearson, 2007), with an emphasis on processes of mass movement (Siegesmund and Ruedrich.

2011, Smith et al. 2010), sea level change (Murphy et al. 2009, Erlandson in press; Solomon, 2007; Kemp et al., 2009, Kemp et al, 2011), fluvial action (Howard et al. 2008), beach erosion and changing flood frequency (Passmore et al. 1993, Macklin et al. 2005 and Anisimov et al. 2008), and sediment redistribution (Fagherazzi et al, 2004). These coastal processes have different and varied levels of impacts on coastal historic features, cultural landscapes, underwater parks and preserves, as well as structures (Murphy et al, 2009).

2.3.1. Sea-level rise and coastal erosion

Sea-level rise is considered to be one of the main forcing factors controlling the evolution of coastal features and environments (Solomon, 2007; Ters, 1986). There are two types of sea level change: over the long-term, local or relative sea level (RSL), and global mean or eustatic sea level (MSL). MSL is a measure of the height of the oceans. Currently, MSL is rising at a rate of approximately 2mm per year. It is predicted that global sea levels might rise between 60 and 200 cm in the 21st century (Ananthaswamy 2009; Woodworth et al. 2008). An accelerated global sea level rise has been noted by several studies, mainly associated with global warming, and different scenarios have been modeled (Gehrels et al, 2008, Church and White, 2006; Engelhart et al., 2009; White, 2011; Gehrels and Woodworth, 2012; Stocker, 2013). The most recent studies estimate an average of approximately 0.5m of sea-level rise (for the low temperature rise) and 1.0 m for the upper temperature scenario (Horton et al, 2014). There is also a probability (17%) of exceeding 2.0 m of sea-level rise by AD 2100 under the upper temperature scenario (Parris et al., 2012). This will produce higher impacts on cultural and institutional process (Oppenheimer et al., 2007; O'Reilly et al., 2012; Brysse et al., 2013).

Relative sea level, on the other hand, depends mostly on the factors that are causing the local land or sea floor to move up and down. Therefore, for each area, depending on the RSL and MSL, different scenarios of sea level changes can be modeled. Sea level rise and coastal erosion may have been driven by natural processes for much of the past 20,000 years, but since 20th century, sea level rise has become increasingly anthropogenic as humans have intervened more in the environment by damming rivers and reducing littoral sediment supply, constructing breakwaters and jetties, sand mining, dredging, ship traffic, and other coastline modifications that have accelerated the erosion of shorelines (Erlandson, 2008).

According to Intergovernmental Panel on Climate Change (IPCC) reports which use emissions scenarios as the basis for projecting future SLR ranges, different scenarios of SLR acceleration can be expected (Solomon, 2007; Rahmstorf, 2007; Pfeffer et al., 2008; NCDENR, 2010). With an initial rise of 4.27 mm per year (Zervas, 2004), a rise of 0.4 meter is considered a minimum for the next 90 years. Some scenarios indicate a two- to four-fold increase in rates of rise over the last century (Church and White, 2006; Rahmstorf, 2007; Kemp et al., 2009).

Several studies have been conducted on Sea-level rise in the Cape Fear Area around Brunswick County in North Carolina and South Carolina (Bloom, 1967; Cinquemani et al., 1982; Gornitz and Seeber, 1990; Peltier, 1996; Donnelly, 1998; Engelhart and Horton, 2012). In addition to the eustatic sea level rise rates (about 3.4 mm per year through altimetric means according to Cazenave and Llovel, 2010), relative sea level in North Carolina varied from 3.0 to 3.3 mm per year in the 20th century (Kemp et al., 2009a; 2009b; Woodworth et al., 2008). Records from North Carolina show a stable sea level between the 15th to the end of 19th century. However, due to the 20th century warming, a sea level rise of 2.1 mm/y has been recorded (Kemp et al, 2011). The coastal plain underlain by the Cape Fear Arch is a well-recognized area where rapid spatial changes in RSL occur (Van De Plassche et al, 2014; Brain et al, 2014). Studies showed that RSL at Wilmington, NC, is very likely to rise by 42–132 cm between 2000 and 2100 (Kopp et al, 2015). More recent studies on sea level show that the number of flood at 0.60 m above current MHHW will increase between 2000 and 2015 due to different factors such as the geomorphology and climate change (Kopp et al, 2015 and 2014).

Sea level rise affects coastlines in several ways. Some of the potential impacts of sea level rise include: accelerated coastal erosion, loss and movement of salt marsh, higher storm surge and property damage, contamination of drinking water with seawater, increased likelihood of flooding during heavy rainfall, more frequent flooding and drainage problems, saltwater intrusion and salinity changes, changes in fisheries abundance and distribution, in addition to many more environmental impacts (Quality, 2016)

The impact of sea-level rise can vary. For instance, several cultural and archaeological sites in many parts of the world have been sunken centuries and millennium before, but they are still in good condition (Benjamin et al., 2011; Evans et al, 2014). Some have been buried under sediment, and some still

exposed on the seabed. One example of such a site is the submerged city of Baia in Italy where a Roman city was submerged in first century BC. The remains of the city are still there and many ceramic floors, walls, statues have been conserved *in situ*. In North Carolina remains of Native Americans can be traced underwater by the shell mounds and stone tools.

The impacts of sea level rise increase the risks of damage to cultural heritage assets. Higher storm surges and flooding can directly damage many historic properties by eroding their foundation through penetration of water or/and destabilizing their foundation. Penetration of salt water in some buildings can accelerate deterioration of some cultural materials. Changes in natural resources (fisheries) can alter traditional activities and result in changes in social settings as well as urban setting. Listed by the United Nations, sea-level changes, along with soil and coastal erosion, moisture, larger amplitude in temperature and humidity, biological invasion, floods, increased storminess, extreme wind gusts, and desertification are included in the climate-change related processes that have negative impacts on World Heritage (UNEP, 2006)

2.3.2. Hurricane and storm; storm surge and flood

Hurricanes with strong winds and surge effects is one of the most destructive weather phenomena, causing severe damage to structures and loss of human lives. Hurricanes are categorized base on their wind scale and the hurricane's intensity at the indicated time (from 5 --the most catastrophic-- to 1-- minimal hurricane) (NHC.NOAA, 2016a; Saffir, 1973; Simpson, 1974; NOAA Hurricane category, 2016; sshw.NOAA, 2016).

Strong winds from a hurricane and other intense storms can cause a rise in the ocean that crashes onto the land in the form of powerful storm surge. The storm surge combined with the heavy rain that comes with the hurricane, especially coinciding with a high tide can cause dangerous flooding in low-lying coastal areas. Hurricane size (extent of hurricane force winds), local bathymetry (depth of near-shore waters), topography, and the hurricane's forward speed and angle to the coast also affect the surge (Jelesnianski, 1972; Irish et al, 2008).

In addition to the obvious impact of destruction of properties, hurricanes have several other effects on the environment such as the change in water quality of coastal aquifers and penetration of saline water into

fresh water (Michener et al., 1997; Anderson, 2002), landfalls, damaging communities (Day et al, 2007), and effect on estuarine and coastal habitats (Baldwin and Mendelsohn, 1998; Stokstad, 2007). Winds generated by hurricanes can completely defoliate forest canopies and cause dramatic structural changes in wooded ecosystems (Science and Society, 2016; USGS, 2015). Considering the changes in the climate, studies predict that climate change potentially can alter the number, duration and intensity of hurricanes (Villarini and Vecchi, 2012; Webster et al, 2005; Emanuel, 2000; Pielke, 2005). Evidences show that warmer global temperatures are already increasing the destructive potential of hurricanes (Emanuel, 2005; Mann and Emanuel, 2006). Therefore, the impact of future hurricanes can vary from what we have already experienced.

Cultural heritage sites can be severely affected by hurricanes, storm surge and flooding. In the 2005 disaster Hurricane Katrina, in addition to severely affecting many properties, the storm caused the destruction of an estimated 1000 historical and archaeological sites along the highly vulnerable deltaic coastlines of the northern Gulf of Mexico (Nicholls et al. 2007). Although Hurricane Katrina was considered a rare disaster, many archaeological and historical sites are damaged or lost to storms and marine erosion every year (e.g. the yearly flooding in Venice is one example of accelerating concern towards the impact of flood on cultural heritage properties). On average, North Carolina is affected by two hurricanes each year ("NHC—NOAA", 2016). Although there are studies on the impact of hurricanes on private and commercial properties in North Carolina, more detailed studies are necessary to evaluate the impact of hurricanes on cultural heritage.

2.3.4. Biological and ecological factors

The biological environment also has a great impact on coastal cultural heritage and archaeological remains (Oxley, 1998). There have been studies on the effects of flora and fauna on materials in the underwater environment and coastal areas (Edyvian et al, 1985; De Brito et al. 2007; Bjordal et al, 2007; Sell, 1998). However, due to the continuous alterations of coastal areas, the different amount of nutrients, and the reaction of materials to the combination of the factors, it is not easy to conclude a certain effect on materials and sites (Ferrari & Adams, 1990). Changes in the water qualities affect the types of species in water (a group of saltwater clams such as *Tredo navalis*) that can have different

impact on archaeological remains (Manders, 2011; Murphy et al, 2009). For example, with the increase of water temperature in the Baltic Sea, the water provided a more convenient habitat for a shipworm, not previously known in the region, which is a threat to the historic shipwrecks (Manders, 2011). The present study acknowledges the importance of studying biological factors impacting coastal cultural heritage. However, studying biological environment is out of the scope of this study.

As discussed above, there are several factors that affect coastal cultural heritage in variety of ways and different degrees. In general, vulnerability is scale-related. On a local scale, a site may be buried under sand and therefore be well preserved, while another may be open to the air or exposed to wave action. The scale factor is not limited to the spatial dimension, but also concerns time. Short events (e.g. a storm) may trigger a local retreat of the coast. Sometimes it may help expose new parts of a cross-section with new archaeological information, and sometimes it might cause irreversible damage to the site (Anderson et al, 2007). Therefore, each site needs particular attention considering many factors (Palma, 2005; Daire et al, 2012).

2.3.5. Factors impacting Southeastern North Carolina coastal areas

Considerable number of studies conducted on the geomorphological evolution of the coastal zone in northeastern North Carolina, which are helpful in understanding the coastal processes in this area (e.g., Riggs et al., 2000; Mallinson et al., 2005, 2008; Culver et al., 2007, 2008). According to Riggs and Ames (2003) the geomorphological and natural factors and coastal processes impacting North Carolina coast, are quite similar all along the NC coast from the north to the south. (Riggs and Ames, 2003). Therefore, the present research relies on this assumption, and use the outcomes of the previous researches for determining natural factors impacting southeastern areas of North Carolina coast

The major factors threatening North Carolina's coast are sea level rise, the recurring annual danger of storm surges during hurricane season, and floods from heavy rain events. However, in the short term, more coastal inundation occurs annually from storm surges than annual sea level rise. Nor'easters along with strong thunderstorms and tropical cyclones create the most wave energy on North Carolina's coast each year (Smith *et al.*, 2006). Tropical cyclones and hurricanes severely affect the coastal areas in North Carolina (Beven et al., 2007; Knutson et al., 2010). In low lying land, the nuisance flooding, which is

increasing due to climate-related sea level rise and land subsidence, combined with loss of natural coastal barriers, is a major factor that can threaten the stability of many structures (Sweet and Park, 2014; Sweet et al, 2014; NOAA, Nuisance flooding, 2016).

The coastal system of North Carolina is incredibly varied, with rivers, swamps, estuaries, marshes, barrier islands, inlets, beaches and offshore shoals and rock. In the south, barrier islands are short, with many inlets, and are close to the mainland (Rigs and Ames, 2003). Within Brunswick county region, shoreline erosion is severe within the drowned-river estuaries such as the Cape Fear. Brunswick County coast has little to no natural estuary system, and the Intracoastal Waterway occurs as a narrow canal cut through a small upland segment where this headland extends to the beach; this is the case in Holden Beach. West of Shallotte Inlet to the Little River Inlet, the narrow back-barrier estuaries are filled with salt marsh and tidal creeks (Riggs and Ames, 2003).

Shoreline changes and erosion are other impacting factors in the coastlines. Based on the 2011 N.C. Division of Coastal Management (NCDCM) report, 62% of the North Carolina shoreline change rates at -2 feet per year or less, and 20% measured erosion rates between - 2.5 and -5 feet per year (NCDCM, 2016). According to NCDCM, Brunswick County is comprised primarily of developed shoreline, with the exception of Bird Island, which is state-owned and designated as "Not to be Developed." This shoreline is exposed and vulnerable, facing wave activity from the south. Waves can have short-term, seasonal, and long-term impacts on both the cross-shore and along-shore beach shape. Although drastic changes in beach width and elevation can occur during a single hurricane, the more frequent storms and wave events also change the general beach outline (BIMP, 2011).

Considering the factors that have been studied for North Carolina and their level of impact on the shorelines, in the present study the impact of four major factors on coastal cultural heritage have been assessed by creating heritage risk maps: sea-level rise, floods, storm surge, and hurricanes, and are presented in the "Result" section. The study also investigate that if the current and available data is sufficient to plan protection and management of cultural heritage sites.

2.4. Methodology

The study has been conducted in three main phases with application of different methods through data collection and rapid coastal assessment of cultural resources, benefiting from analysis of existing cases and finally data superimposition. The study applied a synthesis approach, using available data in order to produce the final risks map for coastal cultural heritage in Brunswick County, in the aim of providing recommendation for policy making.

2.4.1. Phase 1: Data collection and rapid coastal assessment

A buffer of 2 miles from the edge of the water, including the rivers and Intracoastal Waterway, in Brunswick County has been selected. For choosing the buffer, the criteria of Areas from Environmental Concern (AEC) were adopted. AECs coastal areas include: coastal wetlands, estuarine waters, public trust areas, estuarine shorelines, ocean beaches, frontal dunes, ocean erosion areas, inlet lands, and fragile natural resource areas (State Coastal Zone Boundaries, 2012). The aim is to explore what cultural and archaeological sites in this buffer might be affected by the aforementioned four natural and environmental factors. The data for cultural and archaeological sites have been collected from the Office of State Archaeology, the Office of Historic Preservation and other sources such archives and site visits. A rapid coastal zone assessment, which includes some site observations (including visiting several archaeological and cultural sites to assess their present state), aerial photos (in order to see if the sites that are mentioned in the data sets can still be traced in the landscape), and reviews of the available reports about the sites in order to have a general idea of the physical state of the sites and their locations. The data sets were reviewed in order to understand the trends and patterns and to investigate whether any conclusion regarding the impact of natural and environmental changes and/or the state of preservation of the sites and structures can be drawn from the information in the data sets.

The same categorization system used to assess importance of cultural heritage as pertaining to eligibility for National Registration, was used for the present research. The criteria for assessments were adapted based on the data provided by the State Archaeological Office, Historic Preservation Office, and National Park Service (NPS Criteria, 2016). Their states of preservation have been studied based on the available data and some site visits. Some sites such as Indians' occupation sites needed re-identification and

evaluation (Khakzad, 2014); others such as fishing and other maritime cultural landscape sites need recognition and assessment. Part of the data on cultural heritage assets of traditional and cultural communities were acquired from previous parallel studies (Khakzad, 2016: Present research, Ch. 3)

To better understand the data sets, a combination of archival research, aerial photo analysis, interviews and field work was conducted. Since considerable amount of information exists from the Early Colonial Period up to more recent data collected from archaeological excavation in the 1960s, an archival study at the NC State Archaeology Office and Historic Preservation Office provided information about the sites that have been observed, reported or excavated. This office has already mapped these sites and the present research used the same data. The field work comprised site visit, evaluation of the physical state of the sites and documentation of the states for a number of sites. Many of these sites are part of private properties. A few are in protected areas, and some are disturbed by urban and road development. The archaeological data were laid over recent aerial photos (2016). As a part of rapid coastal zone assessment, a spatial analysis was conducted in order to characterize the locations of the historic and archaeological sites in relation to the urban elements (buildings, roads, bridges) and natural features (forests, rivers, and so on). This spatial analysis showed that many sites are already destroyed and/or covered by new urban elements. This analysis saved a great deal of time from additional field work. For example, comparing aerial photos, tracing the data about the Pontoon Floating bridge in Sunset Island showed that the bridge existed until 2008, but was replaced in 2011 [Fig. 2.1].



Fig. 2.1: Aerial image of the Pontoon Bridge before, during and after removal. Photo courtesy Google Earth

2.4.2. Phase 2: single case study analysis

Five different types of cultural heritage sites--earthen structure, light house, shipwreck, wooden structure and archaeological site-- in Brunswick County and Cape Fear Area were selected. Their state of preservation and efforts in their management are compared and qualitatively analyzed in order to demonstrate how managers and people react to different situations and respond to different environmental factors while managing coastal cultural heritage. The state of preservation, management and registration of these five different types of cultural heritage sites are analyzed as much as the available data about these sites allowed. Complications in preservation and management of these sites are highlighted and compared with each other. Some questions that are raised from this analysis were put up for discussion. In this part of the study the goal was to highlight the points that are involved in preservation and management of cultural heritage sites.

2.4.3. Phase 3: Data superimposition and risk maps production

In order to assess the level of vulnerability to different natural factors in North Carolina (hurricane, storm surge, flood, and sea-level rise), existing geomorphological data from the Coastal Atlas⁷ (Coastal Atlas, 2016) (Sea level rise, storm surge and flood), and NOAA (sea-level rise (Digital Coast-Sea Level Rise, 2016) and hurricane (National Hurricane Center, 2016)) have been collected. Available geomorphological data and archaeological and historical maps were compiled and compared with the present condition of the shorelines (2016). This data is superimposed with heritage maps in ArcGIS. Different ArcGIS methods of analysis (e.g. Cross Tabulation and Zonal Geometry) were used to predict the impact value of different environmental factors at the sites in the study area. To assess the impact of development, data from NOAA's Coastal Change Analysis Program (C-CAP) is used to examine development over several decades. This imagery helps to evaluate the general spatial patterns of land use and development in the region through time and to understand the level of impact that development has had on heritage sites.

⁷ The North Carolina Coastal Atlas is a collaborative effort to enable access to coastal data and inform coastal managers, scientists, students and the interested public. It provides selected geospatial data, visualization tools and thematic maps focused on coastal resources and hazards.

2.5. Data collection

Two main sets of data were compiled for this study: cultural heritage data and geomorphological and environmental data. Different sources were used for collecting relevant data for Brunswick county coastal area.

2.5.1. Cultural heritage data

The data set for cultural and archaeological sites in the coastal areas in Brunswick County were acquired from the Office of State Archaeology, and sites with significance for traditional fishing communities have been recorded during the field research and through conducting interviews with fishermen. The ECU archive was also consulted to collect more information on some sites. Compiling all these data sets showed that there are more than 1300 archaeological and cultural heritage site in the study area (1.5 mile buffer) [Table 1].

Table 2.1: an overview of the number of cultural heritage sites		
Type of Sites	Number of sites	Source
HPO	682	The Historic Preservation Office
ESI_HS (points)	5	NOAA
ESI_AS (Points)	251	NOAA
OSA (Archaeological Sites and points)	369	The Office of Sate Archaeology
Total # sites	1307	
The data for HPO and OSA were acquired through the offices that are mentioned. The data is accessible through request from the relevant office under the condition of confidentiality. ESI data was collected from http://response.restoration.noaa.gov/esi		

In the list provided by the Historic Preservation Office, more than 900 sites are noted in the study area which are historically significant with federal and state program status of National Register, Study List, and Determined Eligible, or None of the above (HPO.NCDCR.Data, 2016). These sites are categorized according to the State Historic Preservation Office with different codes based on their status (HPO.NCDCR.County, 2016) as shown in Table 2.

Table 2.2: Categorization of cultural heritage based on the data acquired from Historic Preservation Office															
Status	BF	DOE	DOED	DOEDHD	LHD	NR	NRD	NRDH	SA	SD	SL	SLD	SLDOE	SLHD	SO
# of sites	267	4	2	1	5	15	1	5	1	175	10	3	1	2	1160
<p>NR - Individual National Register listing. These are places listed to the National Register of Historic Places. NRD - National Register, Gone (whether the historic resource has been destroyed or moved to a new site) NRHD - Center point of a National Register historic district. SL - Individual Study List entry. These are places that the National Register Advisory Committee has identified as potentially eligible for the Register. SLD - Study List, Gone (whether the historic resource has been destroyed or moved to a new location). SLHD – Center point for Study List historic district. DOE - Individual “Determination of Eligibility” in environmental review work. Resource has been determined eligible under Section 106 of the National Historic Preservation Act of 1966. DOED - Determined eligible, Gone (whether the historic resource has been destroyed or moved to a new site). DOEHD – Center point of Determined eligible historic district. SLDOE - Both on the Study List and Determined Eligible. SLDOED - Both SL and DOE, and Gone (whether the historic resource has been destroyed or moved to a new site). SLDOEHD - Center point of district that is both SL and DOE. SO - Surveyed Only. No individual designation, but may be within a National Register, Study List, or DOE district. SD - Surveyed only, Gone (whether the historic resource has been destroyed or moved to a new site). BF - “Blockface”. A point marking an area where multiple properties were surveyed as a group, typically one or both sides of a block in a historic district. SA - Surveyed area. Center point of an area where several properties were surveyed together, typically a rural crossroads).</p>															

2.5.2. Geomorphological and environmental data

Geomorphological and environmental data was accrued from several reliable sources such as the National Oceanic and Atmospheric Administration (NOAA) website (NOAA.Web, 2016), US geological Survey (USGS) website (NOAA.vision, 2016), NC Coastal Atlas (NC Coastal Atlas.Web, 2016) and the Federal Emergency Management Agency (FEMA). USGS and NOAA provide data about the natural environment; natural hazards that threaten lives and livelihoods; natural resources; the health of ecosystems and environment; and the impacts of climate and land-use change (USGS.Web, 2016). Data provided through these sources are in digital format, suitable for direct input to software that can analyze its meaning in the scientific, engineering, or business context for decision makers (NOAA.About, 2016; USGS.data, 2016). NC Coastal Atlas enables access to geospatial data, visualization tools and thematic maps focused on coastal resources and hazards (NC Coastal Atlas maps, 2016) in order to inform coastal managers, scientists, students and the interested public. For the present study the data presented in Table 3 were compiled from the aforementioned sources.

Table 2.3: Natural-environmental data and their sources		
Data	Source	Link
Flood hazard zones	NC Coastal Atlas	https://www.nccoastalatlas.org/explore?map=96
	FEMA (National Flood Hazard Layer)	https://www.fema.gov/national-flood-hazard-layer-nfhl http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30
Storm Surge	NOAA NC OneMap	http://www.stormsurge.noaa.gov/models_obs_modeling.html http://services.nconemap.gov/arcgis/rest/services/NC1Map_Hurricanes/MapServer
Sea Level Rise (three scenarios)	NOAA (CSC flooding depth)	http://maps.coast.noaa.gov/arcgis/rest/services/dc_slr/slr_1ft/MapServer http://maps.coast.noaa.gov/arcgis/rest/services/dc_slr/slr_2ft/MapServer http://maps.coast.noaa.gov/arcgis/rest/services/dc_slr/slr_3ft/MapServer
	NC Coastal Atlas	
Hurricane	NOAA (National Hurricane center)	http://www.nhc.noaa.gov/satellite.php

2.6. Analysis of existing cases in North Carolina

Five examples of sites and buildings that affected by natural and environmental factors are presented here to understand how people and managers might respond to these factors when they impact different types of cultural heritage sites.

2.6.1. Bald Head Island Boat House Site Description

This site is an old wooden boat house, listed on the National Register of Historic Places, and according to its Registration Form, as a property that is associated with events (fishing, boatbuilding, etc.) which have made a significant contribution to the broad patterns of our history (NRHP, 2016). The registration form was prepared in 1997, which describes the site as: *“The ca. 1915 Bald Head Creek Boathouse is a structural marker in a long history of European settlement of the maritime Cape Fear region. It is a surviving member of a series of structures erected beginning in the late eighteenth century that signified efforts to provide safe ship passage in this treacherous stretch of the North Carolina coast. Like its preceding and contemporary companion structures, the boathouse is a straightforward expression of the elemental lives of lighthouse keepers and Coast Guard workers that reflects the maritime, salt marsh environment that shaped them.”* (National Register of Historic Places, registration Form). The boundary for the Bald Head Creek Boathouse includes a 25-foot swath surrounding the perimeter of the boathouse.

The boathouse is situated in Bald Head Creek, a tidal creek which is constantly shifting. The 25-foot swath around the boathouse includes a portion of the creek and marshland.

This simple single-craft, rectangular frame, gable-roofed structure rests on wooden pilings. It was built to store supplies and boats. Due to the dramatic change of the shape and direction of the creek channel during the past ninety years, the boathouse location in relation to the water has changed. The natural changes, in addition to the changes to the social (i.e. more tourists and new comers versus fishermen) and urban (i.e. relocation of the fishing facilities) setting resulted in abandonment of the boathouse, and therefore its rapid deterioration. Although the site is one of the most popular paintings and photographic scenes on the island and it is a registered site, no action has been taken for its preservation, and its structure is suffering from deterioration. The fact that the building is standing on wooden pilings in tidal marsh suggests the stability of the building is questionable. The comparison between the pictures taken at the time of its registration form preparation (1997) with recent pictures (2015) shows the extent of its deterioration in about three decades [Fig. 2.2a &b].

The boathouse case shows that natural factors, such as wind and dampness and the major shift of the river channel, combined with the lack of preservation effort are the main factors deteriorating the building. Despite status as a National Registered building, no preservation efforts have taken place to date.



Fig. 2.2a: Aerial image showing deterioration of the roof structure of the boat house (Photo by: Lynn Harris)



Fig. 2.2b: The Creek Boathouse in 1997 © NC State Historic Preservation Office photo collection.

2.6.2. Rose Hill Plantation Shipwreck – Site Description

A large concentration of shipwrecks is submerged in the waters of Cape Fear. These vessels represent the evolution of ship architecture and construction (Price, 1948). The Rose Hill wreck, possibly an 18th century shipwreck, is located in 18 feet of water on the bottom of the Northeast Cape Fear River (Wilde-Ramsing et al, 1992). The shipwreck is located adjacent to the River Bluff community development, near a planned boat ramp [Fig. 2.3].

The entire Cape Fear River basin is situated within the coastal plain. The river's main stream and its tributaries are typical black water (i.e. a deep, slow-moving channel flowing through forested swamp or wetland), with sand-detritus bottoms and high turbidity, containing moderate to high levels of inorganic nutrients. The two large black water rivers—the Black and Northeast Cape Fear Rivers—flow into Cape Fear mainstream (Mallin et al, 2006; 2013). Cape Fear stream gradient is considered low (Flanagan et al, 2008), and the average gradient around the shipwreck reported less than .5 feet per mile (Giese, et al., 1985:31). The Northeast Cape Fear River begins in Wayne County, North Carolina, flows south through Duplin, Pender, and New Hanover counties and at Wilmington flows into the Cape Fear River, which in turn discharges into the ocean (Hubbard and Stramper 1972: E4). According to Giese et al, 1985, tides are the dominant flow component where the shipwreck is located (Giese et al, 1985:31-32). Tidal range at the site is 3.4 feet, semi-diurnal cycle of the tides is about 12 hours and 25 minutes (Hubbard and Stramper, 1972: E4; NOAA, 2004; McAdory, 2000). At this location water is well mixed, with no vertical stratification of fresh and salt waters (Hubbard and Stramper, 1972: E4).

Rose Hill Plantation shipwreck's remains are considered significant due to its suspected age and the fact that these remains represent elements of the colonial period in North Carolina, which are very rare (Wilde-Ramsing et al, 1992). A team of archaeologists from ECU in collaboration with Underwater Archaeology Branch of North Carolina Department of Cultural resources, assessed the condition of the shipwreck's structural integrity, stability and riverine site formation processes through site visit and survey in 2015. Although the wreck is severely eroded by river currents, the lower hull retained its structural integrity, and during its documentation and survey in 2015 it was noticed that it is in an excellent state of preservation, due to the fact that the shipwreck is located in deep water, although it is very close to the shore. However, its exposure on the river bottom subjects the wreck to natural phenomena such as river

currents and suspended debris, which cause erosion and scour (Keith and Evans, 2016), and biological organisms that progressively colonize in the wood and destroy it by producing enzymes (Gregory, 2016). All these contribute to gradual erosion of the wreck, and leads to its instability and destruction (Blanchette, 2000; Martin 2011; Keith and Oxley, 2016; Gregory, 2016). A combination of environmental and anthropogenic factors such as natural forces, construction projects, and/or sport-diving activities may accelerate its deterioration in the long run. The property adjacent to the river where the shipwreck is located, contains construction for a residential complex that plans to build a dock in the vicinity of the shipwreck. This intervention risks the integrity of the site. In addition, awareness about this shipwreck promotes interest in diving and visiting the site. Un-supervised and irresponsible diving can cause damage to the shipwreck as well (NAS, 2016). The case of the Rose Hill Shipwreck highlights the fact that sometimes the natural environment can provide protection for a site. However, if no preservation measures are taken, the shipwreck can suffer from several other natural and anthropogenic factors. Despite its historical significance, the Rose Hill shipwreck is not nominated for listing in the National Register of Historic Places yet, although the documentation and reports provide considerable amount of understanding to its significance.

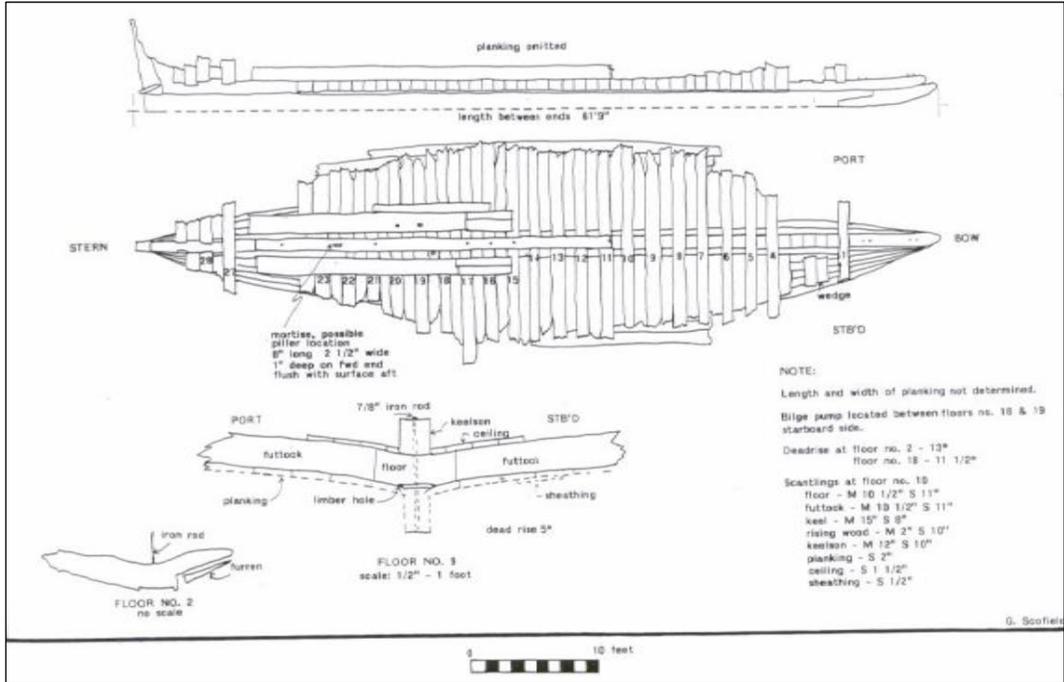
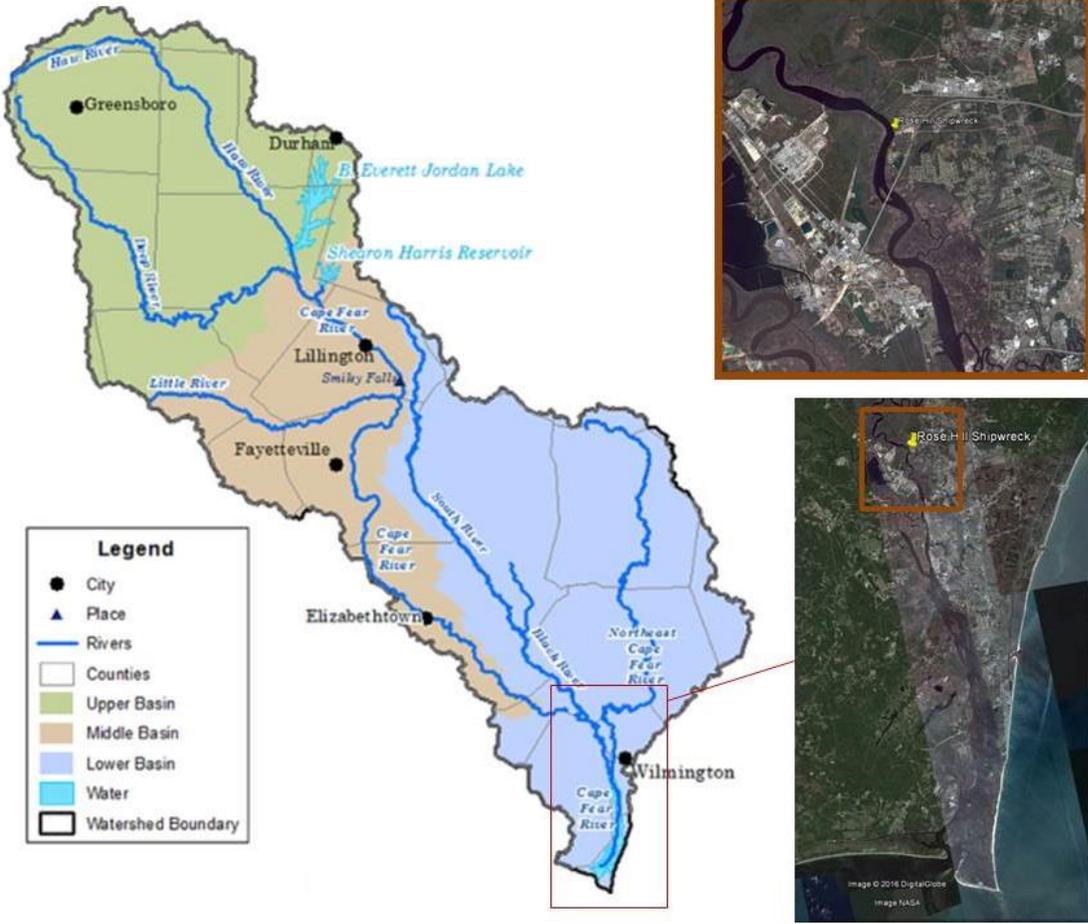


Fig. 2.3: Cape Fear River and the location of Rose Hill, and Rose Hill Shipwreck Plan at River Bluff development (NC UAB Report)

2.6.3. Brunswick Town – Site Description

Brunswick Town was settled about 1725. The town was erected at the previous (or adjacent to the previous) Charles Town, and some archaeological remains of Native Americans settlements (Lee, 1963). Brunswick Town was one of the most prominent port and political centers (Pedlow, 1979: 9). The site comprises historic houses and ruins, and remains of the port and wharves. The work to actively save historic places from destruction or unsympathetic alteration began with the establishment of the Brunswick Town State Historic Site in the 1950s (Landmark Preservation Associates, 2010). Brunswick Town is a Historic Registered Site.

Archaeological studies in Brunswick Town have identified the remains of four colonial wharves and the possible locations of five more. Cape Fear River experiences hydrological floods, which is a peak in river discharge following rain or snowmelt, and causes erosion along the river shoreline (Becker, Luettich, & Mallin, 2010). Jim McKee, historic interpreter for the Brunswick Town State Historic Site, stated that since 2010, due to the Cape Fear's flooding and strong water flow, the banks of the river are constantly eroded, which results in the exposure of more wharves [Fig. 2.4]. The preservation efforts aim to conserve 3,600 linear feet of coastline with "Tensar Geogrid" marine mattresses, rock-filled mesh containers that offer a place for vegetation growth and absorbs the energy of constant wave motion, produced by tides and passing boats, as well as flooding. In order to protect the site, more preventive actions are required. The land is partially owned by the private sector and partially by the military. Disagreement among the owners is one of the issues that complicates the prospect of a unified strategy for management and preservation efforts (Star News, 2013).



Fig 2.4: Images show different sections of Brunswick Town along the Cape Fear River, where the impact of water flow clearly altered the sites and caused exposure of some artifacts and destructions in some sections. ©The State Archaeology Office, Photo courtesy: John Mintz

2.6.4. Cape Hatteras Lighthouse – Site Description

When completed in 1870, the Cape Hatteras Lighthouse was assumed to be located a safe, 1500 feet from the ocean. However, storm-driven tides completely washed over Hatteras Island, eroding sand from the ocean side of the island and depositing it on the sound side (Rowlett,?). Extensive series of efforts such as fencing and grass planting by the Civilian Corps and the National Park Service in the late 1930s helped to create a series of barrier dunes ridges. More conservation efforts since 1966 by the Cape Hatteras National Seashore (CNHS) have included construction of and rebuilding of three groins, rock revetments, deploying layers of nylon sand bags, planting artificial seaweed, and dumping asphalt onto the beach in order to stabilize the lighthouse structure (Riggs, 2011:91-94).

The Cape Hatteras area is a highly dynamic area (Riggs et al, 1995; Mallinson et al, 2008; Mallinson et al, 2010). Despite all the efforts for stabilization of the lighthouse, the natural process of shoreline erosion was still threatening the structure. By 1970, this process, which has caused the gradual westward migration of the Outer Banks for at least the past 10,000 years, left the lighthouse just 120 feet from the ocean's edge in danger of destruction (Riggs, 2011; NPS.movingthelighthouse, 2016). Therefore, in 1999, the Cape Hatteras Light Station, which consists of seven historic structures, was relocated 2,900 feet from the spot on which it had stood since 1870 (Booher and Ezell, 2001). According to the National Park Services, the decision to relocate the Cape Hatteras Light Station was a sound public policy decision based on the best science and engineering information available [Fig. 2.5].

The case of the Cape Hatteras Lighthouse shows that the natural and environmental threats to historic buildings can be so overwhelming and sometimes extreme actions are considered to safeguard our heritage. Due to the historical and cultural significances of this building, extreme measures were taken to relocate it.



*Fig. 2.5: This aerial photograph shows how close the lighthouse was to the sea. During strong storms, sea water would wash around the base of the structure. (NPS photo) ^
The move path spanned 2,900 feet. In the new location (bottom right) the keepers' quarters are already in place before the lighthouse move. ->>*



2.6.5. Fort Fisher – Site Description

Construction of defensive works on Federal Point started in the spring of 1861 (NC Historic Sites, 2016).

There were two faces to the fort: a line of man-made soil-mounds which formed the *Land Face*, extending along Shepherd Battery to the sea. The *Sea Face* was constructed later as a continuation of the previous mount line and completed in 1863. In 1865 the Fort was bombarded. Fort Fisher was expanded and used during WW II (Forth Fisher WW II Files). Today, approximately ten percent of Fort Fisher still stands along with a restored palisade fence. The site has been declared a National Historic Landmark and is now part of Fort Fisher State Historic Site (NSP.CRGIS, 2016).

The earthen fortifications of Fort Fisher have suffered due to their proximity to the Atlantic Ocean in different ways. The sea level rise has already cause submergence of a large portion of the fort. Additionally, erosion by waves and tide has deteriorated the remains of the fort in a way that presently no remains can be detected on the beach. Beachfront erosion destroyed most of the fort by the 1950s. However, in 1996 this erosion was temporary controlled by installation of a rock revetment. Nonetheless, the erosion caused by wind and rain continues to damage the remaining earthworks. Due to the size of the fort, ongoing wind/rain erosion and complications of preserving such structures, its preservation has been of concern of archaeologists and cultural heritage managers (Harris et al, 2015).

2.7. Concluding points from the case studies

No single conclusion could have been drawn from the case study analysis section. One general idea is that registered/nominated historical buildings should be in better state of preservation. Although in many cases it can be true, the cases from Bald Head Island Creek Boat House and Brunswick Town proved this is not always the case. However, public awareness, the element of social-cultural pride associated with the sites, the importance of the sites for the public and in their history, and sites' visibility are determining factors in decision-making. Therefore, in some cases, more effort is needed to be directed towards awareness raising, studying different types of sites and highlighting the value of variety of different cultural assets in our history. In addition, obviously the state of cultural properties, their structures and materials integrity, and their location in relation to natural factors are major factors in their preservation and future stability (for instance case of Fort Fisher and its vulnerability to the natural factors). In some cases, joint efforts for planning preservation and management of cultural property needs to be promoted, especially in the cases where cultural property has shared ownership.

In Table. 04 the result of this section is summarized. This brief study highlighted that different factors combined can promote or decline preservation of the cultural heritage properties.

Cultural Heritage Site	Type	National Reg.	Threatening Environmental Factors	Preservation Efforts	Complications	Discussions and questions
Cape Hatteras Lighthouse	H	Yes	Erosion by waves and storms	Relocation (Done)	Considerable amount of scientific effort and funding	How and why did this project work successfully?
Brunswick Town (Wharves)	H/P	Yes	Erosion by flood	Partial protection & stabilization (In process)	Conflicted ownership and funding	How to come up with a joint plan? Public awareness?
Creek Boathouse	H	Yes	Weathering and Deterioration	None	Ownership & lack of interest	Why it has been overlooked?
Rose Hill Shipwreck	H	No	Erosion by currents Threats of development	None	Accessibility & funding	What can help its preservation? Potentials and obstacles?
Forth Fisher	H	Yes	Erosion by wind/rain	Some	No proper plan, no adequate ground cover	What is the best way to protect such a vulnerable site?

2.7.1. Data superimposition and risk maps production

With a focus on spatial and specifically “place-based” sites, geo-visualization is helpful in analysis for multiple purposes and users, for interpreting spatial patterns, and for better and more informed communication among academics, government managers, and stakeholders (Slocum et al, 2009). There are examples of visualizations of storm surge forecasts, hurricanes and floods that offer opportunities to improve risk awareness and communication of impending disasters in emergency situations such as a hurricane evacuation (Allen et al, 2013; FEMA, 2016; Houston and Powell, 2012). GIS software provides an efficient tool for mapping and loss estimation, such as the FEMA HAZUS (Pine et al, 2005).

Learning from projects such as FEMA HAZUS and other modeling, in this section, the project proposes a series of maps for general risk evaluation of archaeological and cultural sites. These maps are produced by superimposing natural-environmental data, determined as the main impacting factors in North Carolina (flood, storm-surge, sea-level rise and hurricane), and cultural and archaeological data. These risk maps highlight the areas that potentially suffer from these factors. The level of threat for each factor has been calculated based on interpretation of the existing data according to level of severity that was assigned to each factor based on the literature and different scenarios. These levels are relative.

2.7.2. Risk Maps

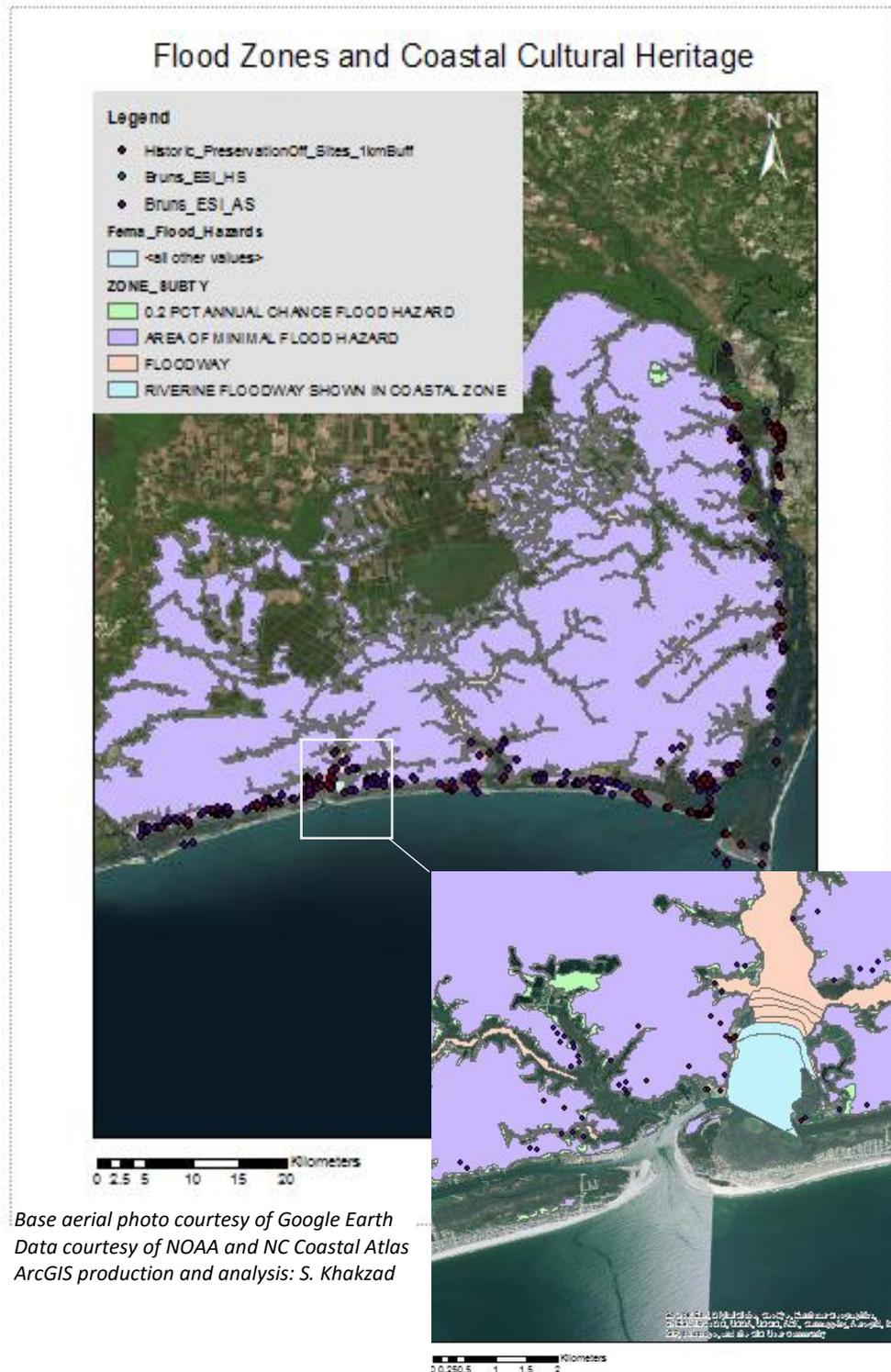
a. Superimposition of Flood Hazard Zones and Archaeological—Cultural Data

In this study, the scales from FEMA has been used for flood hazard zones⁸. Flood hazard areas identified on the Flood Insurance Rate Map, according to FEMA, are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood, or 100-year flood. Moderate flood hazard areas are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance

⁸ NOAA uses the MEOW (Maximum Envelope of Water), which represents the worst-case flooding scenario possible from a threatening hurricane of a given category, size, and particular track direction (FEMA, 2003).

flood (unshaded) (FEMA.flood-zones, 2016). This data was superimposed with cultural heritage data [map 2.1]

Map 2.1: Flood Zones and Coastal Cultural Heritage



Based on the literature and data from FEMA and insurance evaluation, for a 2% chance of annual flood, the author assigned Impact Value 3; for Minimal Chance, Impact Value 1; and for Flood Way, Impact Value 2. Although flood ways are important in FEMA, no cultural-archaeological sites are located in these areas. For Riverine, a 0-value has been assigned, and this area is excluded from the calculation, since only one location that was considered as ‘riverine flood ways shown in coastal zones’. In addition, there was no cultural archaeological site was marked in this riverine flood area. After assigning the values, the cultural and natural data was mapped and analyzed in ArcGIS, using Cross Tabulation tool. Map 1 was produced for “Flood Zones and Coastal Cultural Heritage” as a risk map for flood risk, and the number of potential sites in different impact zones are summarized in Table 2.5. Table 5 shows that 40.85% of total sites are in low level of flood hazard, 11.09% in moderate level of flood hazard and 2.70% in high risk of flood.

In order to estimate the impact of different level of flood on the cultural and archaeological site, each site needs a separate study on the physical state of the existing structure, materials and artifacts within the sites, and the vulnerability of the site and its structure to flood. The risk map here only demonstrates the site that can be affected by flood, and the impact factor does not consider the sites’ vulnerability.

Table 2.5: Shows the number of case study area’s sites that are in flood hazard zones.

Type of Sites	Total #	Flood Hazard Risk Impact		
		1	2	3
Historic Preservation Office	682	284	14	1
ESI_HS	5	3	0	0
ESI_AS	251	146	0	23
OSA	369	101	131	4
Total site	1307	534 (40.85%)	145 (11.09%)	28 (2.70%)

b. Superposition of Storm Surge Zones and Archaeological—Cultural Data

Base on the GIS data set of Hurricane Storm Surge Inundation Areas, developed by the National Hurricane Center, in cooperation with the North Carolina Center for Geographic Information and Analysis in 1993, four categories of storm surge that causes inundation were mapped: cat0, cat3, cat12, and cat45) (Nc1map_Hurricanes (Mapserver)). These categories, which are a conservative estimate of inundation in worst case scenario, denote zonal areas, comprising a wide range of still-water level surges (For example, the cat12 layer is a map of what would be inundated by a Safir-Simpson scale category 2,

which is a worst case scenario for a storm of that category, and cat45 would be a category 4 or 5 storm inundation extent). The storm surge data were superimposed with cultural heritage data such as historic preservation sites, archaeological points and archaeological sites [Map 2.2].

It should be noted that the storm surge data acquired from NC OneMap and used for the present research have originally been accumulated and mapped with the technology and capability of the mid-1990s. This data was manually made by digitizing the original data onto topographic maps, using SLOSH model to estimate the areas that a surge might cover. Therefore, the accuracy of data and covered zones might not be exact. Furthermore, this data does not show the depth of inundation, or the force of storm surge and tides.

Map 2.2: Storm Surge Zones and Coastal Cultural Heritage

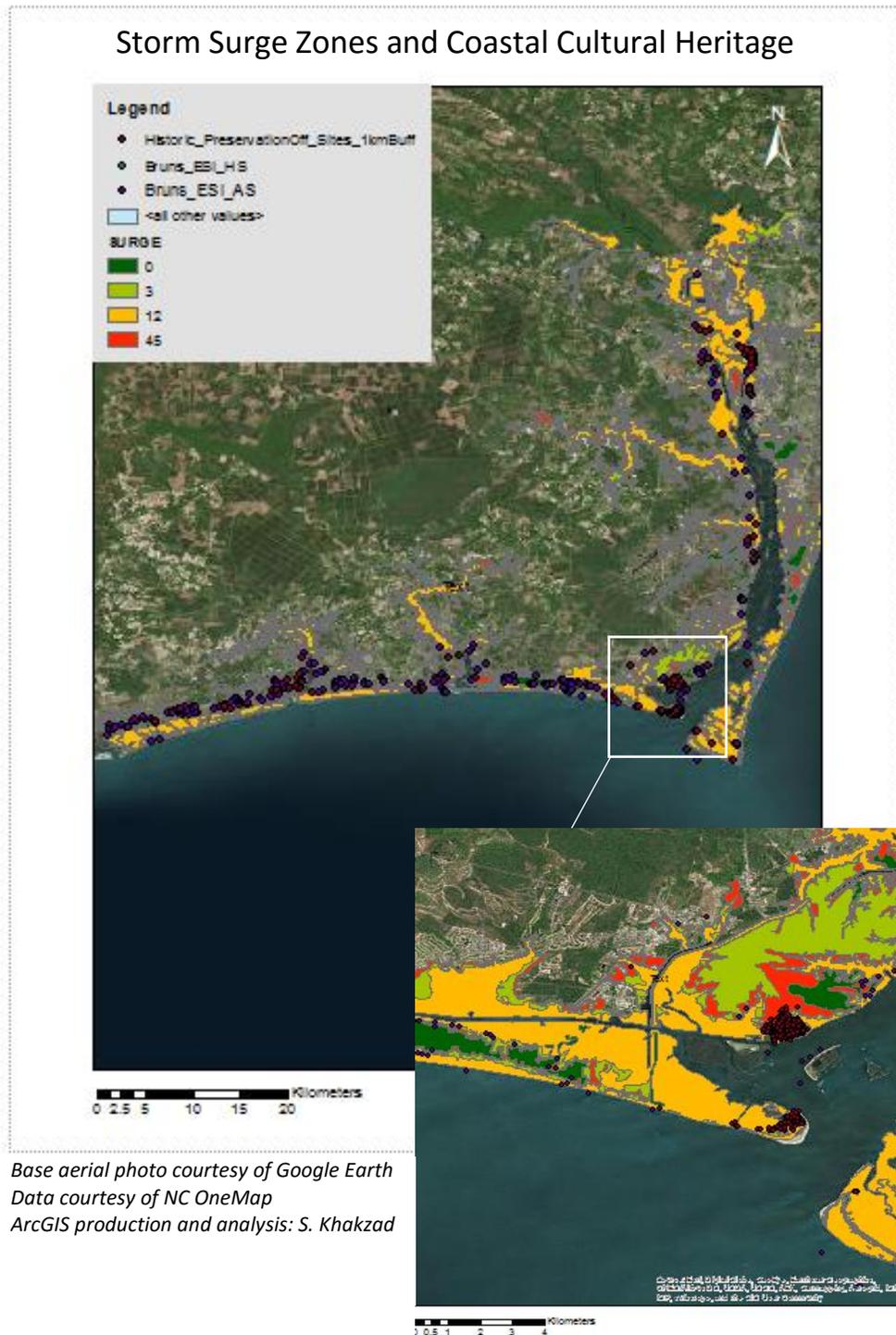


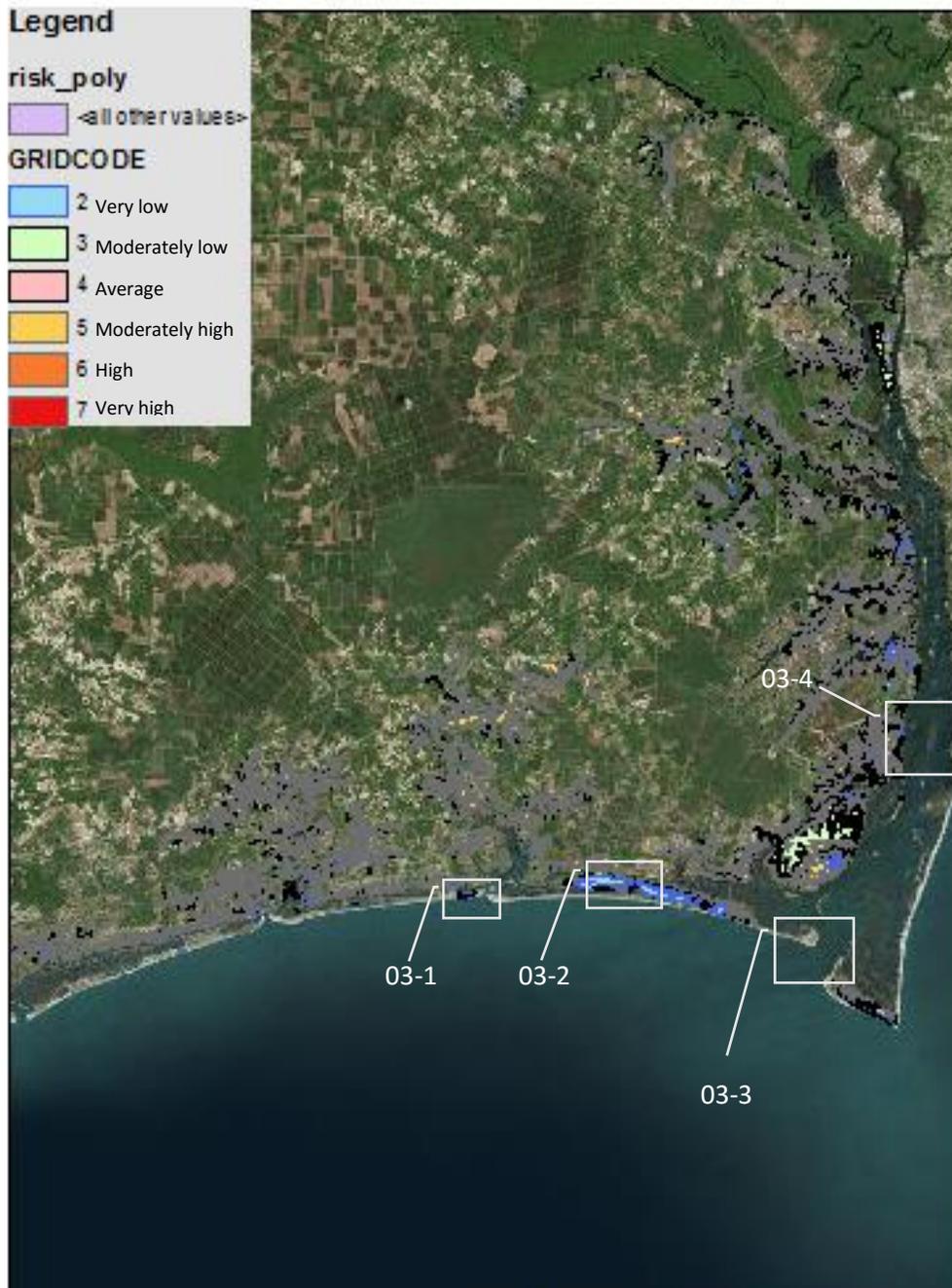
Table below [Table 2.6] shows the number of sites that are endangered by different levels of storm surge. About 7% of the sites are in low level of risk (1) by storm surge; 18.28% are in secondary level of threat (low moderate: 2), 14.30% in high moderate (3), and 11.32% in high level of threat (4) by storm surge.

Table 2.6: Shows the number of case study area's sites that are in different Storm Surge (SS) zones.					
Type of Sites	Total #	Storm Surge Risk Impact			
		1 (SS: 0)	2 (SS: 3)	3 (SS: 12)	4 (SS: 45)
Historic Preservation Office	682	0	65	130	32
ESI_HS	5	0	1	1	0
ESI_AS	251	21	24	45	28
OSA	369	68	149	11	88
Total	1307	89	239	187	148

c. Superposition of Combined Storm Surge and Flood Zones, and Archaeological—Cultural Data

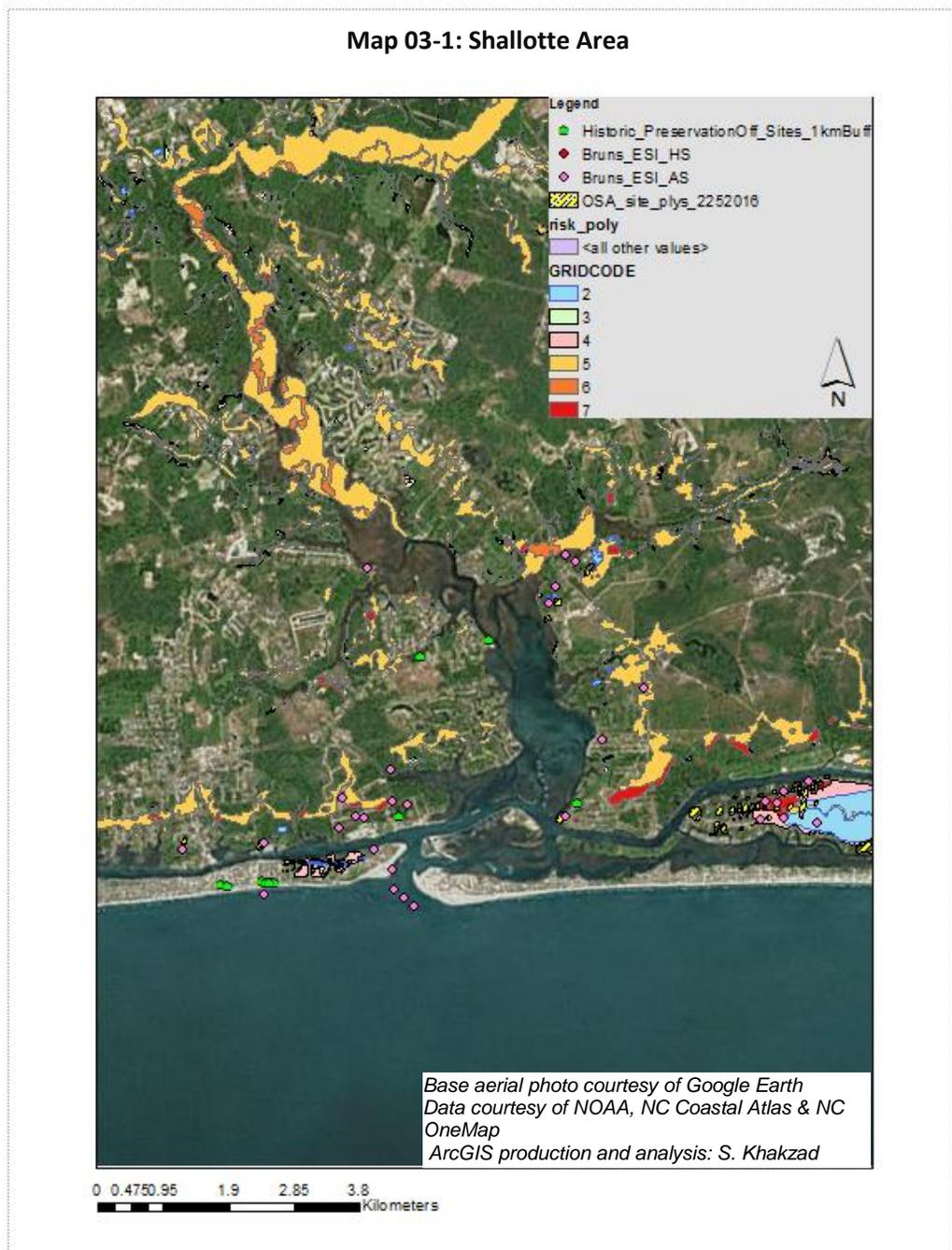
Storm surge and floods are ongoing factors impacting coastal areas in North Carolina. Therefore, a risk map combining these two factors can highlight the areas that can be more at risk considering these two factors. The risk map for combined flood hazard and storm surge was produced in ArcGIS, using FEMA flood hazard layers and storm surge data, and by applying Cross Tabulation to have quantitative data about the amount of the risk areas [Map 2.3]. Based on this analysis six values of 2 to 7 were associated with the combined factor of storm surge and flood hazard zones. 2 is the lowest, combined the low storm surge level (1) and minimal flood hazard (1), meaning that the risk of combined factors is minimal, and 7 is the largest number, combined the strong level of storm surge (4 which is associated with storm surge of 45) and high level of flood hazard (3 which is associated with the 2% probability of annual flood hazard) meaning that the risk of thread by storm and flood is the highest [Map 3]. Some sections of this map have been zoomed in figures Map 2.3a to 2.3d.

Map 2.3: Combined Storm Surge-Flood Zones and Coastal Cultural Heritage



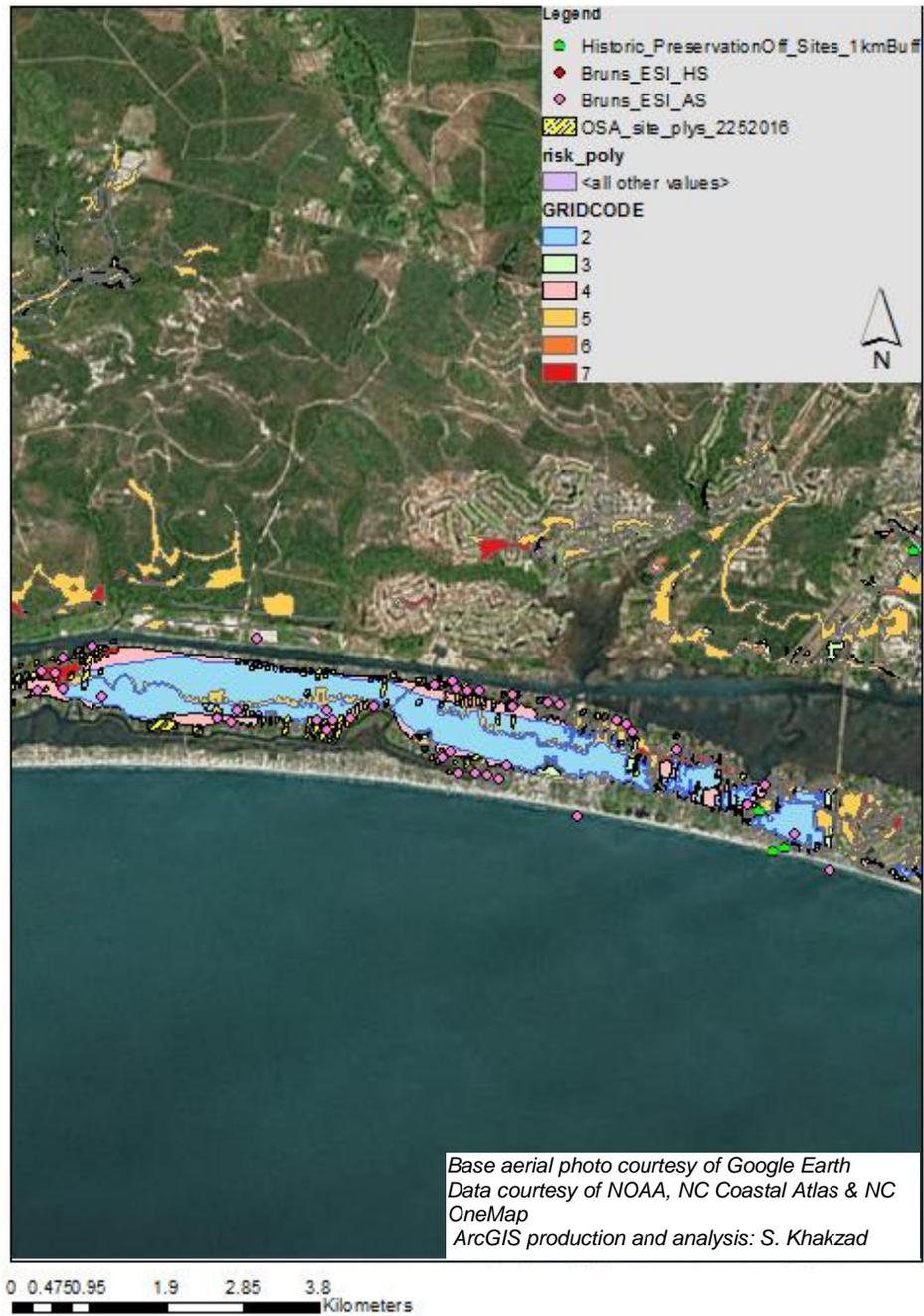
Base aerial photo courtesy of Google Earth
Data courtesy of NOAA and NC Coastal Atlas
ArcGIS production and analysis: S. Khakzad

Map 2.3a to 2.3d: Combined Storm Surge-Flood Zones and Coastal Cultural Heritage



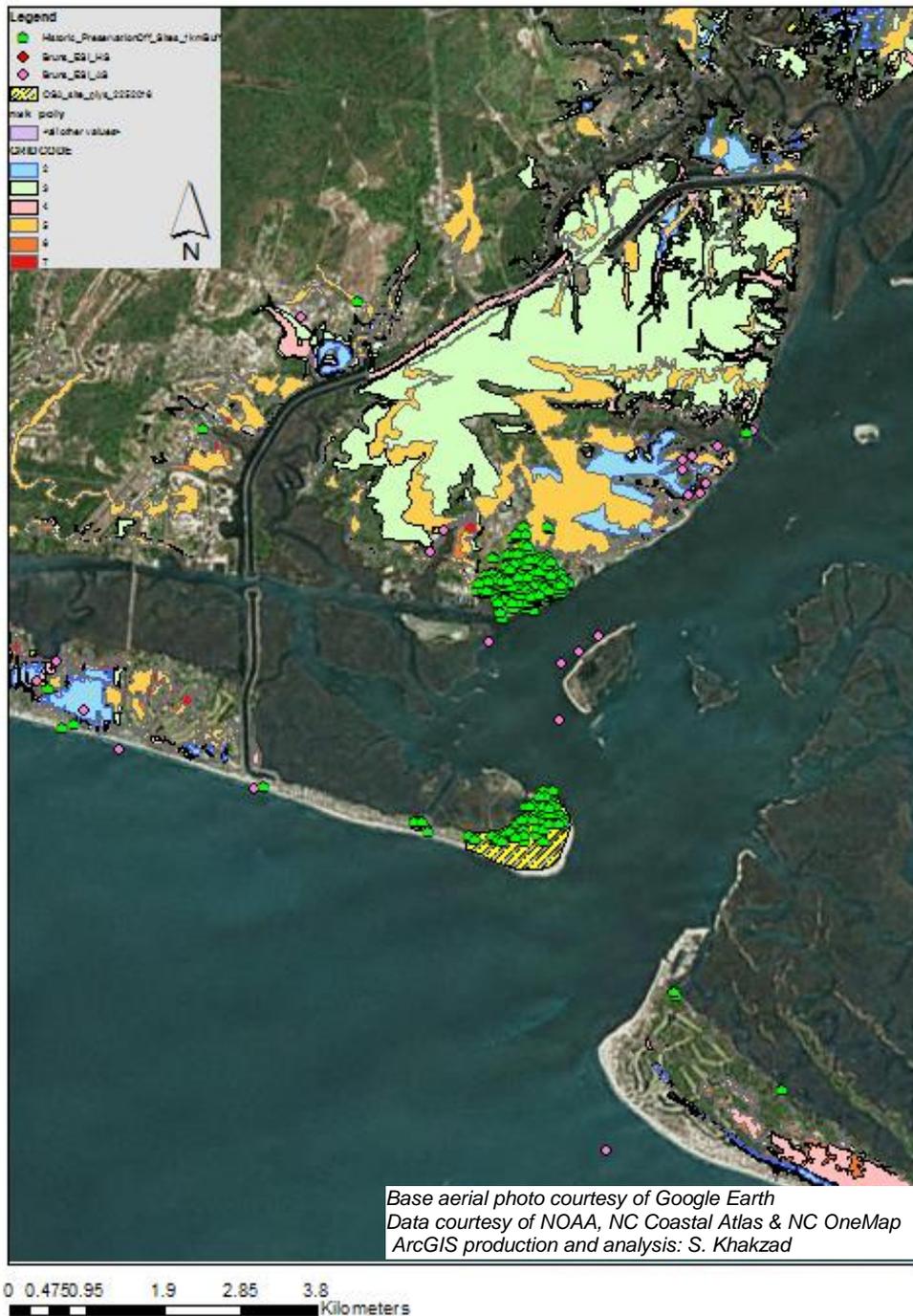
Map 2.3a shows the Shallotte River area. The upper section of the river shows a moderate to moderately high level of the risk of combined storm surge and flood hazard factors. However not many known archaeological sites are in immediate danger. There are two traditional fishing communities in the upper level of the river that their maritime cultural landscape and buildings and material objects associated with them can be affected by moderate level of storm surge and flooding. Some sites along the Intercoastal Waterway might be affected by the two risk factors, although the level of impact is low to moderately low.

Map 2.3-2: Oak Island



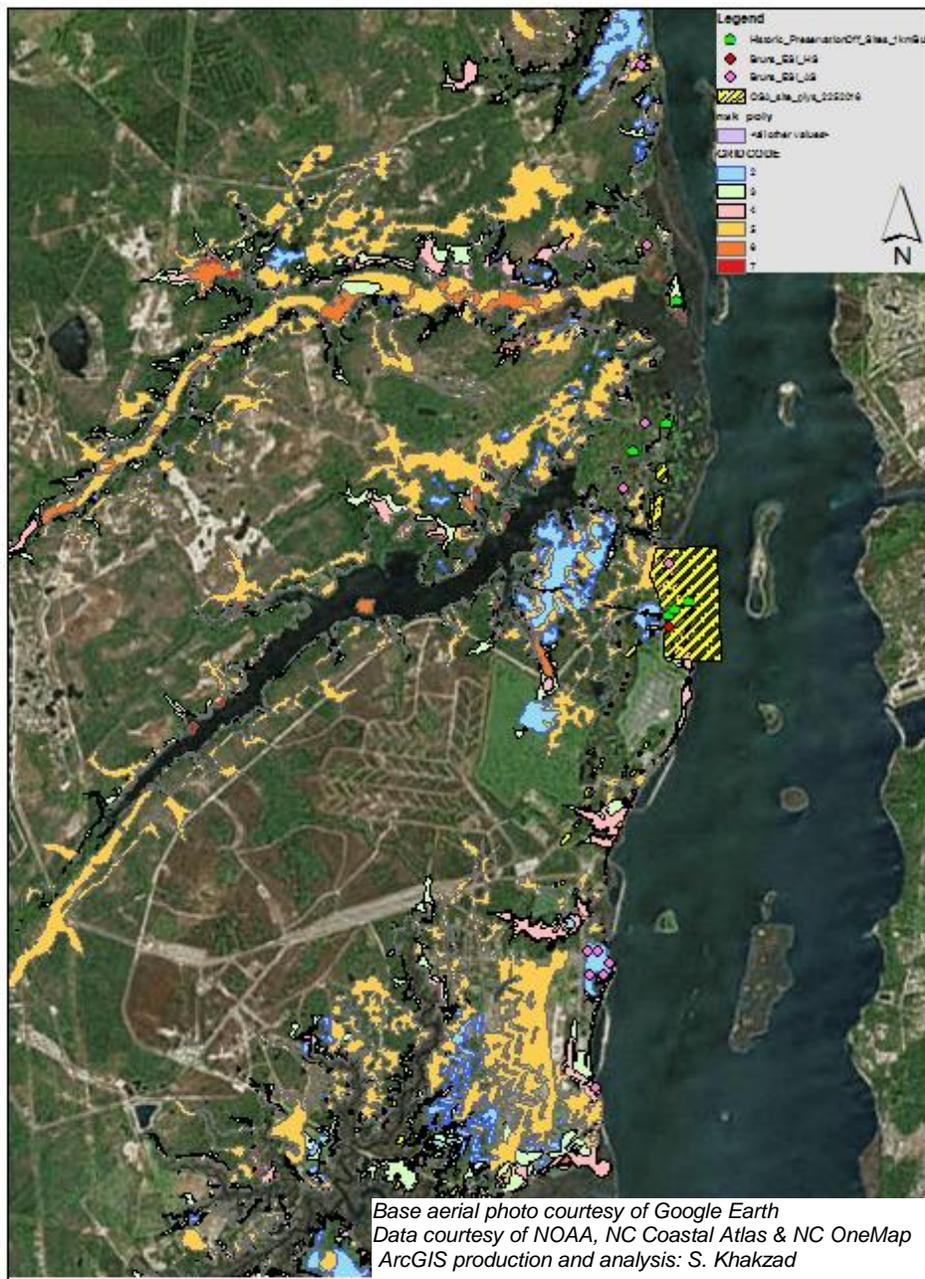
Map 2.3b shows Oak Island area, which mostly minimally can be affected by the combined factors of storm surge and flooding. In some areas moderate level of combined factors can affect possible existing sites as well. Very small areas show the high level of threat by the combined factors. Holden Beach contains archaeological sites which have already been affected by urban development.

Map 2.3-3: Cape Fear Area



Map 2.3c shows Cape Fear area including Southport and Bald Head Island. These areas are possibly endangered by moderate levels of combined storm surge and flooding. The earthen archaeological remains from the British Fort in Bald Head Island can yearly suffer from both flooding and storm surge. Southport and its historical sites and building possibly suffer from both factors to some extent as well.

Map 2.3-4: Cape Fear River



Map 2.3d shows the areas around historic Brunswick Town along Cape Fear River. In line with actual observation of Brunswick Town, the map also shows that the site suffers from a moderate level of combined flooding and storm surge. However, this risk is mostly to threat the site along the river shoreline.

The number of sites that are potentially affected by different levels of combined storm surge and flood hazard (here called Two-Factor Risk) are summarized in Table 2.6.

Type of Sites	Total #	Two-Factor Risk Impact					
		2 (Lowest)	3	4	5	6	7 (Highest)
Historic Preservation Office	682	59	14	2	43	0	0
ESI_HS	5	0	0	0	0	0	0
ESI_AS	251	11	0	8	14	1	7
OSA	369	44	49	78	113	39	31
Total	1307	114	63	88	170	40	38

Vale 2 is the lowest level of risk and and value 7 is the highest level of risk threat by storm and flood combined. 8.72% of the sites are in a very low, 4.82% in low, 6.73% in moderate, 13% in moderately high, 3.06 in high, and 2.90 in a very high level of threat, yearly, through combined factors of storm surge and flood.

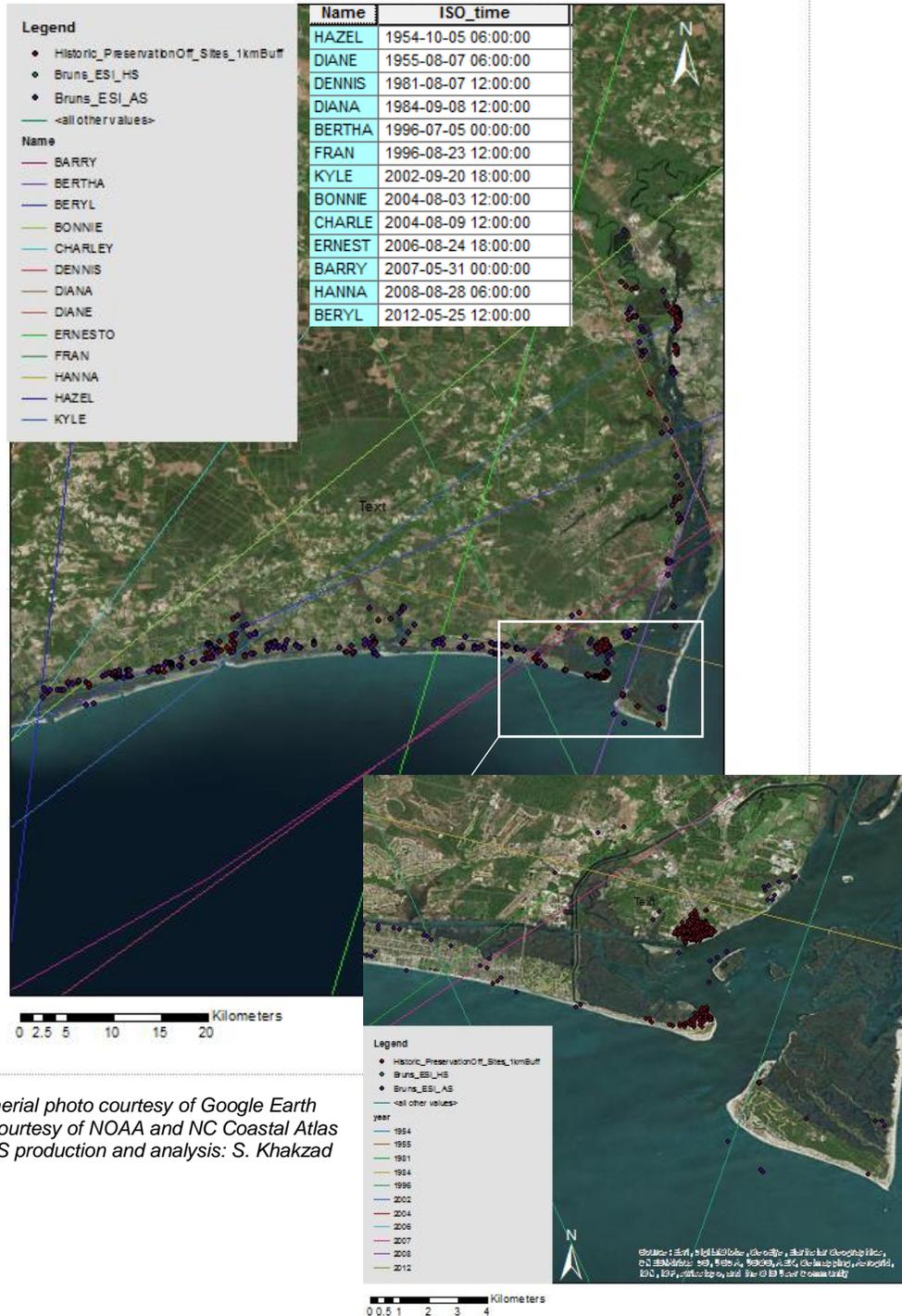
d. Hurricane and Archaeological—Cultural Data

According to the map and hurricane data, many hurricanes impact the Cape Fear area [Map 2.4]. The concentration of heritage assets in Cape Fear and upstream in Cape River is high. Therefore, the probability of cultural heritage being damaged by a hurricane can be considered high. Hurricanes Dennis (1981) and Barry (2007) had almost exact routes, however their years of occurrence were far from each other. Bertha (1996) and Fran (1996) hit Cape Fear area in the same year very close to each other. Hanna (2008) also hit the Cape Fear area. In the western side of the Brunswick coast, the number of hurricanes which hit the coastal areas is also high. Hurricanes Beryl (2012), Bonnie (2004) and Charley (2004, cat. 4) hit the land in a very close distance from each other. Considering the fact that these lines are only the pattern of the hurricanes’ eyes, the affected area is much wider than these lines—sometimes tens of kilometers. However, the intensity of the hurricanes is also different. Since there is no prediction map available for future hurricanes, a risk map for future cannot be concluded from the available data. However, the probability of damages caused by hurricanes on the coastlines of Brunswick County is a viable factor.

In addition, threats of hurricanes to cultural assets can vary, depending on the state of the historic/archaeological sites and buildings. An assessment of the state of existing sites, buildings and their structures can help to analyze the impact of possible hurricanes and storms on those items. Since the information provided by the State Archeology Office and the Historic Preservation Office does not

provide such information about the structural stability of all cultural and archaeological sites, their data is not quite adequate for assessing the stability of these sites, if hit by different categories of hurricane.

Map 2.4: Hurricanes and Coastal Cultural Heritage



Base aerial photo courtesy of Google Earth
 Data courtesy of NOAA and NC Coastal Atlas
 ArcGIS production and analysis: S. Khakzad

e. *Sea-level Rise and Archaeological—Cultural Data*

Sea level rise is a long term risk and its impact on cultural heritage sites can be mitigated, if enough understanding of the extent of sea level rise and its damages on different types of heritage can be estimated. The sea-level rise data acquired from NOAA uses three scenarios of 1ft, 2ft and 3ft flood that were projected on the maps. These three layers were superimposed separately with the archaeological and historical data.

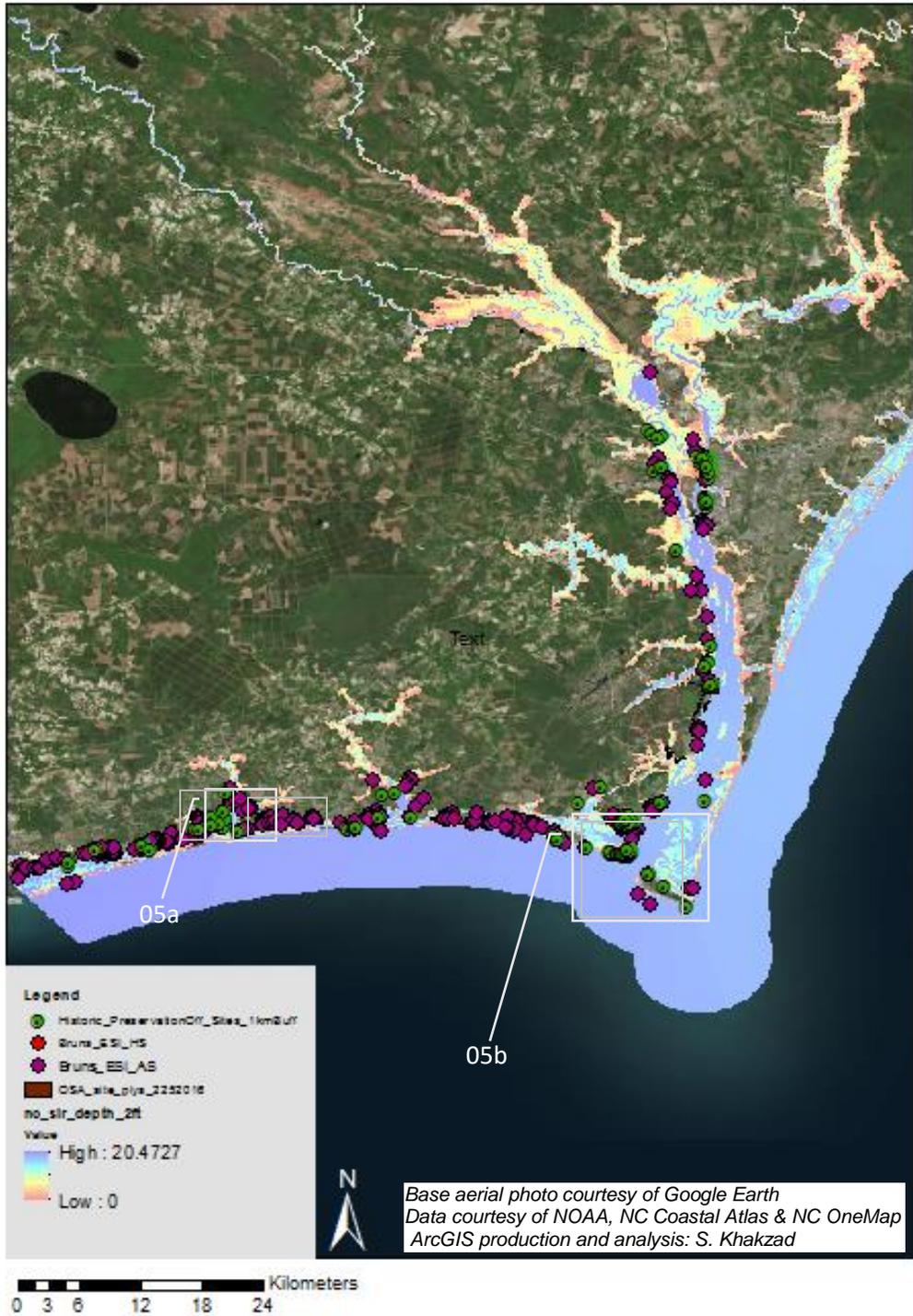
A general map for 2 ft. sea-level rise has been presented in Map 2.5. Some sections of the maps, where more coastal cultural heritage have been recorded, and more impact of sea-level rise has been noticed during the current analysis have been presented in Maps 2.5a to 2.5b for better detail of the extent of sea-level rise affecting the cultural assets in the study zone.

Map 2.5a shows the Shallotte River and Shallotte Inlet. The first scenario of sea level rise—1 ft.—affects some of the sites that are close to the water edge, mostly at the mouth of the river and low lands and islands. However, the second and thirist sea level rise scenarios (2 and 3 ft.) do not show significant land submergence and immediate danger to any historical and archaeological sites in Shallotte area.

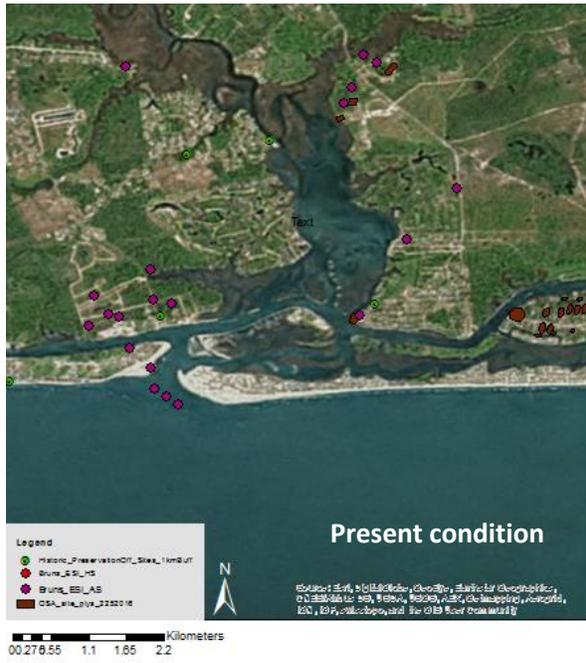
Map 2.5b shows the Cape Fear area. The impact of sea level rise on this area and on cultural heritage sites seem to be more severe. With the occurrence of first sea level rise scenario, several cultural heritage sites, such as the archaeological sites known as British Forth and Hospital on Bald Head Island, will completely be inundated. The Creek Boathouse will be in immediate danger of impact by sea-level rise. Also, many archaeological and cultural heritage sites, such as Bald Head Island Lighthouse, Fort Caswel and Oak Island Lighthouse might suffer from immediate proximity to the water. Although in some cases the water might not reach the sites or cause inundation, the closer the water gets to the sites, the risk of damage by penetration of salt water increases. The 2 and 3 ft. sea level rise scenario shows that some low land areas will be flooded and the depth of submergence of some areas will increase depending on the topography. Some prehistoric and historic, and American Indians' archaeological sites will be inundated, in the occurrence of different sea level rise scenarios. However, the impact of sea level rise can vary on these sites, depending on the type of soil and complications which will occur as a result of sea level rise, and the sites' possible existing artifacts and materials.

Scenario 2: 2 ft. Sea-Level Rise

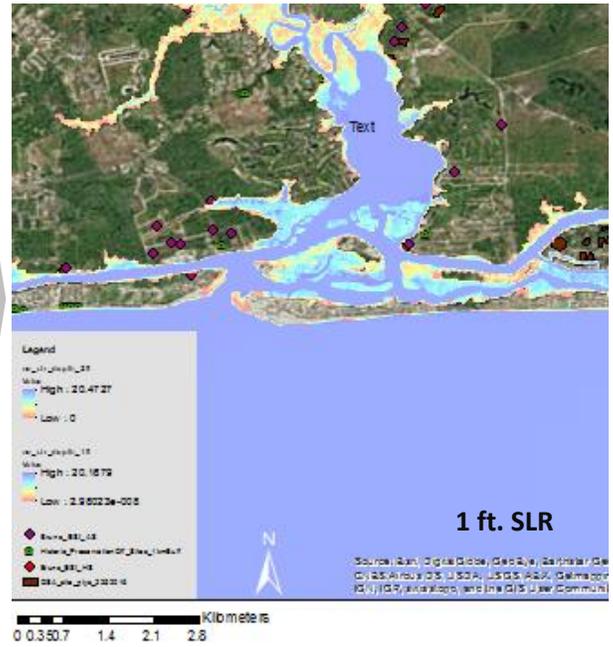
Map 2.5: Sea-Level Rise and Coastal Cultural Heritage



Map 2.5a: Shallotte River Area



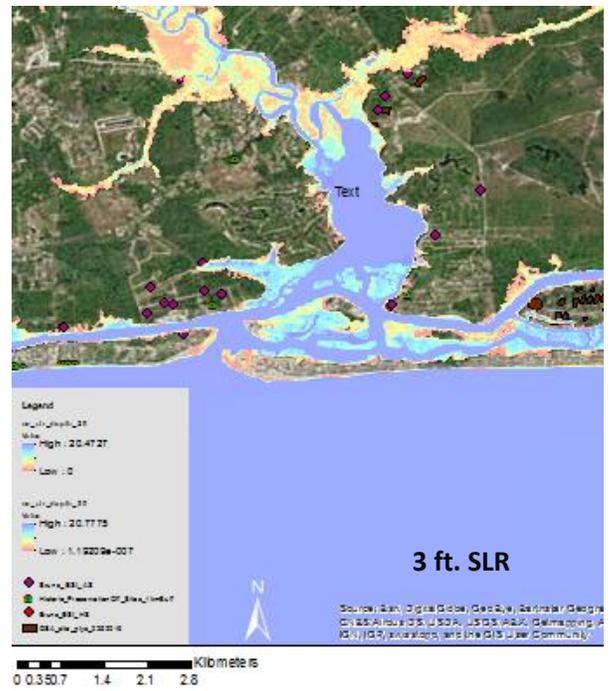
1 ft.
SLR



2 ft. SLR



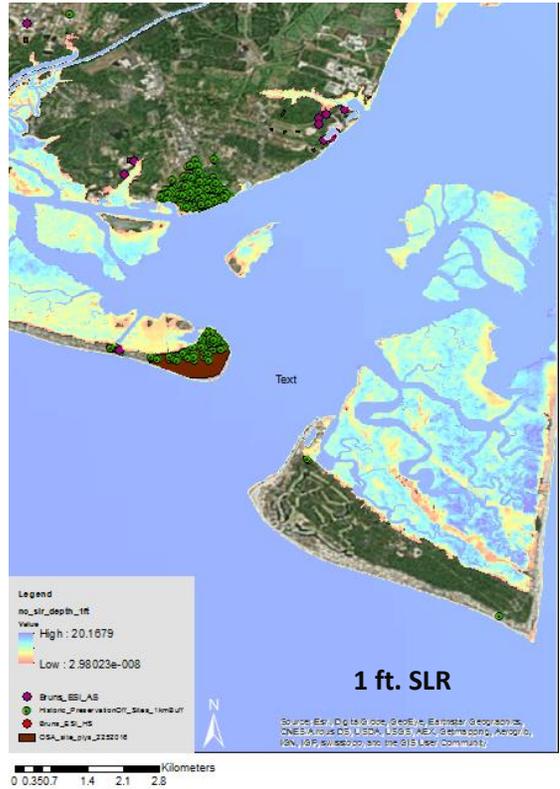
3 ft.
SLR



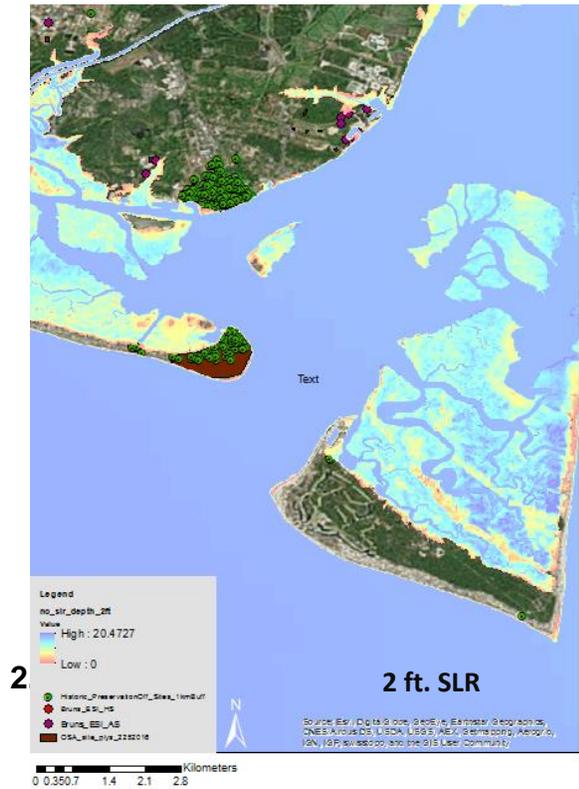
Map 2.5b: Cape Fear Area



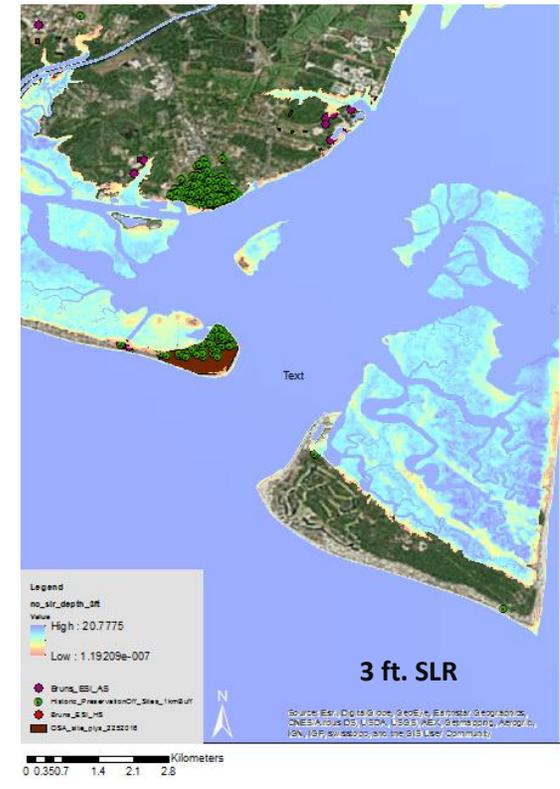
1 ft.
SLR



2 ft. SLR



3 ft.
SLR



Considering that the present study applied an interdisciplinary approach and synthesized methodology for responding to its objectives, several points were highlighted during and after the research. These points are challenges that were faced with analysis of the existing data for the purpose of this research and interpretation of the results. In addition, the disparity of challenges that preservation efforts face in different projects, depending on their location, state of nomination in the historical preservation lists, public awareness and ownership, and finally the factor of development and its impact on preservation of the cultural heritage resources, raise more discussion and research topics.

2.8.1. Challenges with the data

One of the goals of this research was to investigate if the existing data is reliable and/or sufficient for different purposes of analyzing, planning, management. Using these data for the present research revealed some gaps and issues within the data sets. Archaeological data are in two main groups of points and sites. The points are considered as those that were reported as individual findings, and the sites are more likely a vaster collection of findings and remains. The sites and points were labeled as Historic (H), Pre-historic (P), and Both (PH). There are reports available about most of these items at the State Archaeology Office. One issue that the author observed is the fact that many of the sites that were marked on the map and explained in the reports, are from the environmental investigation reports. The zoning of these sites is based on the modern urban planning and blocks of housing that were investigated for possible existence of archaeological and cultural remains, and therefore the number of sites are associated with the number of housing and urban blocks, not with the actual possible archaeological sites.

In data acquired from State Historic Preservation Office, there are several sets of data as mentioned in the data collection section. One important aspect for the present research was to investigate the reasons for destruction/displacement of the ones that were marked as Destroyed/Moved. However, in the data set there was not many items whose destruction/displacement reasons were explained. Since these reasons varied, and also there is no record of all the factors that caused destruction/displacement of sites, no concrete conclusion can be drawn from analyzing these data to understand the major reasons of destruction/displacement of certain sites. The author contacted the respective office to investigate if they

have more comprehensive reports or reasons. However, according to the NC Regional Supervisor, the office occasionally surveys areas that have been surveyed before and the only information they collect is to investigate if the buildings are still in place or not, and usually there is no information about the cause of destruction/displacement of a building or site, if no third party reports it (E-mail communication with Scott Power, Regional Supervisor, Eastern Office, N.C. State Historic Preservation Office, Department of Natural and Cultural Resources). If such information exists, a better analysis could be performed and factors that are impacting coastal cultural heritage could be better understood.

Regarding natural and environmental data, most data were collected from NC Coastal Atlas, FEMA and NOAA. Accumulating data from these sources shows that there has been much more interest in studying the Outer Banks and oceanfront rather than land side of the water. For instance, there are many studies conducted on the coastal erosion, but not many dedicated to the back side of the barrier islands. In general, less studies have been dedicated exclusively to the southeastern North Carolina area. Due to the lack of available data for the study area, several analyses that seemed to be important for assessing socioeconomic aspects of cultural heritage sites in Brunswick County coastal areas are not possible. One of the studies that is considered to be important is analyzing the sedimentation in the rivers where the fishing boats travel and used to travel. Interviews with some fishermen indicated that previously bigger boats were able to travel up river in Shallotte River, but now due to the sedimentation and lack of drainage, big boats cannot travel from the ocean up in the river where a couple of fish houses are located.

In this chapter, the level of threats on cultural and archaeological sites, imposed by possible natural-environmental factors, were estimated separately to. However, the author acknowledges the fact that the level of threat and risk can be amplified by considering that all these factors can impact cultural resources at the same time or during an extended period of time. In addition, GIS analysis also have its own challenges to depict the scope of risks and threats. Also, the ongoing development of modern technology can improve our collecting, interpretation and understanding of data. For example, studies showed that discrepancies in inundation predictions when using traditional contour-based surge maps compared to contemporary digital LiDAR-based inundation models are significant, which can greatly

influence decision making (Allen et al, 2013). Moreover, risk to archaeological and cultural heritage sites can only roughly be characterized by just overlaying structures/sites and natural-environmental factors. The level of impact can vary depending on the sites elevation, material, architectural designs and so forth. In order to design mitigation and protective plans, such as the example of Cape Hatteras Lighthouse, there is a need for a very well investigated sites and structures, as well as using the existing data and risk maps to identify the future threats and make sound decisions regarding cultural resources management and protection. The present analysis only highlighted probable major factors that might impact cultural resources.

2.8.2. Impact of development

In addition to the results above, one of the main factors that are impacting coastal areas in general, and cultural heritage in particular, is urban and industrial development. The number of heritage sites and buildings which are affected by development is more than any other threat. C-Cap data (C-Cap.Web, 2016) in North Carolina shows a growth of 19.58% development in Brunswick County from 1996 to 2010 [Fig. 2.6]. Considering that this rate is still increasing, so many sites, especially the archaeological sites that have less visibility, have been severely affected and covered by new developments.

Although environmental assessment is conducted on blocks before any construction could be permitted, the impact of development on the destruction the homogeneity of cultural heritage sites and cultural maritime landscape is distressing. However, development is not a manageable factor and can be controlled by human. Therefore, the concern regarding development is different from those of natural-environmental factors. These concerns can include, but not limited to, damage to archaeological and cultural site through unsound intervention for development, inadequate time and fund to cover investigation prior to development in a potentially cultural ground, loss of important archaeological sites due to the lack of knowledge regarding unknown sites, aesthetic damage to cultural landscape and historical environment by new construction and development. Controlled and sound decision making regarding development in cultural and historical areas depends on many factors such as human

perception of cultural assets and understanding of sociocultural values, economic situation, and political agenda (Khakzad et al, 2015), which are not in the scopes of the present research.

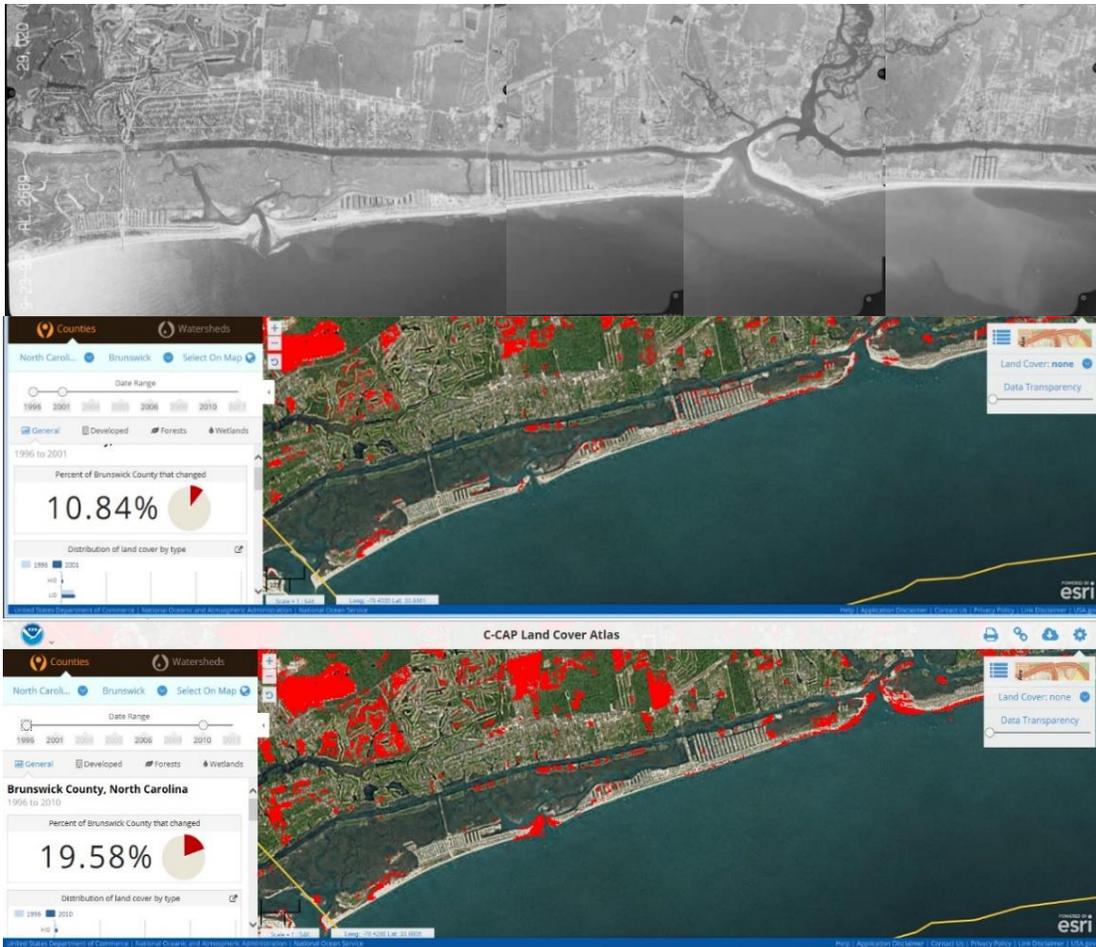


Fig 3.6: Comparison between the 1999, 2004 and 2010 of a section of the coast around Ocean Isle Beach and the mouth of Shallotte River

2.9. Conclusion

Through the analysis of existing cases in North Carolina (Section 2.6) three main points were highlighted that affect preservation and protection of the cultural heritage sites: 1) State of nomination/registration; 2) Public interest, awareness and perception; and 3) Environmental stability.

No comprehensive and single conclusion can be drawn from the fact that if a site is listed on the National Registered of Historic Places its preservation can be guaranteed. However, in many cases, listing helps

promote understanding of the value of the site and highlights its significance. Highlighting the significances of a site can enhance understanding about the sites and raises awareness among the public that can help increase public interest in terms of research, tourism, and sociocultural and socioeconomic promotion. Public interest and awareness can entice funding through different sources such as private, governmental, scientific grants. In addition, a general environmental stability of the site is an important factor in its long-term preservation. However, for a sustainable preservation of cultural heritage, a combination of different efforts and factors is necessary. Lack or overlooking each of these factors increases threats to the sites and risk their preservation.

Efforts in regard to raising awareness and promoting public interest in a balanced way among diverse types of sites and monuments need to be planned. Museums and the tourism industry are the focal points of distribution of sound and balanced information about different cultural heritage sites. At the moment, many categories of cultural sites, namely Native Americans' and traditional fishing, in addition to some other individual sites (e.g. Creek Boathouse) are marginalized. Lack of proper information about these sites for education and tourism promotion factor in with marginalizing these sites, which is a threat to these sites that bear remarkable history and culture.

Existing data on the natural and environmental factors impacting the sites, provided a general idea about the locations that can be more at risk from these factors. However, because there is no complete data available on cultural heritage sites and their materials and structural stability, it is difficult to draw conclusions to how the sites could suffer from these factors. Therefore, a thorough evaluation of historical and archaeological sites and buildings, and their structures is very crucial for estimation of the level of damage to these items. Specific site analysis can enhance our understanding of the state of each site and help to design better preservation plans.

Proper evaluation of different cultural heritage sites can highlight the cultural and historical significances of different types of sites in an unbiased way. This will help to raise awareness among public as well as decision makers in order to promote policies for management of coastal cultural heritage in a more harmonized way in order to keep the benefits of cultural resources for present and future generations.

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Chapter 3: The role of fishing material culture in communities' sense of place as an added-value in management of coastal areas

Abstract: Fishing communities globally are facing significant challenges due to new policies, environmental developments, and urban changes. While it is imperative to ensure sustainability of natural resources, many policies may overlook the contribution of fisheries to the social and cultural well-being of coastal communities. In this paper, the author addresses the problem of valuing the social and cultural benefits of fishing by exploring the role that maritime fishing landscapes and traditional working waterfronts play in maintaining sense-of-place in fishing communities. This chapter explores the contribution that sense of place can make to understanding the relationship between fishing and cultural ecosystem services, drawing on case studies from four U.S. fishing communities in Brunswick County, North Carolina. Through semi-structured and in-depth interviews with fishing communities members, and in addition to resident photography and sites visits, this paper outlines how fishing contributes to sense of place in terms of place attachment, cultural-social memory, and community identities. Through an exploration of the relationship between individual fishers' sense of place, community identity, and the physical environment in fishing communities in Brunswick County, the author recognizes the complexity and interrelated elements that shape the relationship between fishermen and their cultural landscape. The paper suggests realizing the value of fishing cultural landscape can encourage policies that promote preservation of fishing cultural heritage for the sociocultural benefit of communities through specific National Laws on protection of communities' cultural heritage.

3.1. Introduction

With boats, fish houses, ship yards, crafts, traditions and other elements related to fishing (Barrett, 1992), commercial fishermen have not only intervened in the natural environment over centuries in the coastal areas, but also have established identity and place attachment. Place attachments are connections to certain physical and social settings that provide different types of social and psychological benefits (Brown, Perkins & Brown, 2003). Places are characterized by the physical setting, as well as the range of human activities and social processes that are carried out there (Stedman, 2002).

Fishermen and their material culture are a part of a maritime cultural landscape and traditional working waterfront (Davise, 2001; Inscoc, 2006). These places assist in understanding the culture of fishermen and the meaning of this heritage in fishermen's everyday life (Ford, 2011; Ransley, 2011). However, due to the changes in the use of resources and land/sea-use regulations and policies (Hoyle et al, 1988), along with development and climate change, fishing towns are in decline; in many places development has taken over and gentrification has occurred (Jepson et al, 2005; Coperthwaite, 2006). The result has been the loss of maritime cultural heritage such as fishing material culture, traditional waterfronts, and maritime cultural landscape. Based on my research, I suggest that maritime cultural heritage is a public good that, if conserved, can slow or prevent the loss of social value and well-being associated with commercial fishing) (Duran et al, 2015; Brown, 2014). Wellbeing has several dimensions and attributes such as job stability and satisfaction, identity, sustainability and attachment to place (Altman, 1993; Hausmann et al, 2015; Garcia Quijano, et al 2015).

Some studies argue that fisheries policy does not adequately consider social dimensions of fishing communities (Symes and Phillipson, 2009, Steelman and Wallace, 2001, Symes, 2005; Bradshaw et al., 2001, Pollnac et al., 2006; Worm et al., 2009). Others have highlighted the importance of social and cultural contexts of fishing (Griffith, 1999; Urquhart et al., 2011; 2014), suggesting that fishing is not just an occupation (Brookfield et al., 2005, Jacob et al., 2001, Nuttall, 2000; Garcia Quijano, et al 2015), but also a highly satisfying way of life that which defines fishers' identity. Fishing communities can be the site for the creation of deep-rooted place attachments, adding social value to the economic value of fishing (Jentoft, 2000; Marsden and Hines, 2008).

It has been noted that to sustain fishing communities, new perspectives and methods are needed that highlight the wide range of cultural and social values that are generated by marine fishing activities (FAO, 2016; Chapin et al, 2012; Colburn and Jepson. 2012; Kofinas and Chapin. 2009; Johnson et al, 2014). This study investigates how place attachment is strongly linked to material cultural and the cultural landscape. There are three major components of place: the physical form, activity, and meaning (Punter, 1991). Place is a space imbued with meanings (Relph, 1976). This paper reports on the significance of traditional fishing working waterfronts and their material culture for the fishermen in preserving sense of

community and place attachment as attribute of social wellbeing in fishing communities for their sustainability. Figure 3.1 depicts this concept. *“Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.”* (Australia ICOMOS, 2000, Article 1.2; ICOMOS - ISCEAH - ICOMOS Ethical Statement", 2016).

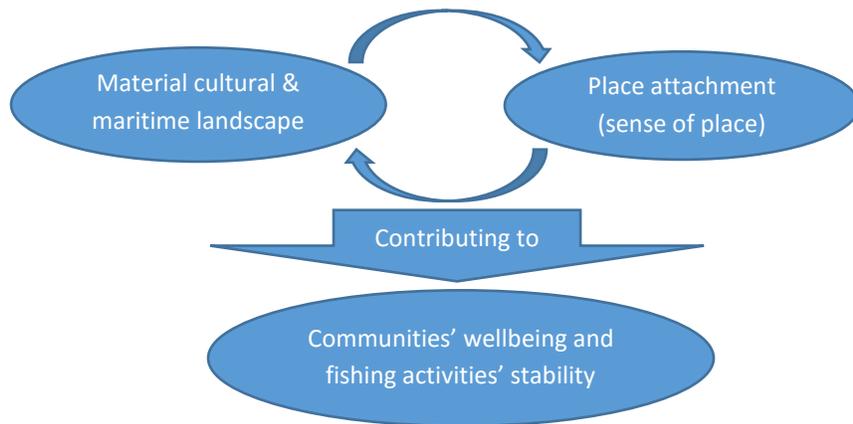


Fig. 3.1: Material culture contributes to formation of sense of place through shaping the cultural landscape and manmade environment, and therefore it is an element that can contribute to communities wellbeing.

Considering that heritage is “that part of the past which we select in the present for contemporary purposes, be they economic, cultural, political, or social” (Graham et al. 2000: 17), this research provides an inventory of valuable commercial fishing cultural heritage in the targeted communities, and investigates and explores the value and role of this heritage in the fishing communities place attachment. This Research explores the proposition that fishermen’s sense of place and attachment to their community is influenced by the amount and quality of fishing material culture and built heritage. This study explores the proposition that there is direct correlation between community sense of place and their amount and quality of heritage and traditional working waterfronts preservation.

The justifications for this research are: 1) although it has been acknowledged that achieving sustainable fisheries is feasible through integrating management and policies across biological, social and economic dimensions (McGlashan, 2000; Forest, 2009), sociocultural values of commercial fishing have mainly

been underappreciated in coastal management (Urquhart et al, 2014); 2) several fishing communities are in decline or in danger of becoming extinct due to several natural and anthropogenic causes, which will result in loss of part of the living history and authentic heritage; and 3) by extinction of fishing communities, many related cultural heritage will be abolished and replaced with new urban development, which results in loss of part of human cultural heritage (Jacob & Witman, 2006). Highlighting the values of fishing cultural heritage helps to promote policies to ensure the continued existence of this tradition as well its associated cultural heritage (Federal Working Waterfront Preservation Act of 2005; Keep America's Waterfronts Working Act of 2009)

To preserve the long legacy of commercial fishing and seafood businesses, several studies regarding tangible and intangible fishing heritage have been conducted in in the US, along the coast and also in North Carolina (NC Sea Grant, 2007; <http://www.wateraccessus.com/cslist.cfm>; Griffith & Mirabilio, 2012). However, no formal studies have previously been conducted to assess the sociocultural role of fishing heritage in fishing communities in southeastern North Carolina. Therefore, in recognition of the dramatic collapse of fish and commercial fishing in this area, this paper studies the role of communities' cultural heritage in place attachment of four existing and active fishing communities in Brunswick County. The communities of Southport, Varnamtown, Holden Beach and Shallotte have been observed and compared with each other in order to evaluate their quantity and quality of fishing cultural heritage, and the role of heritage in preserving sense of place attachment in the members of these fishing communities. Better understanding of fishing cultural heritage in southeastern NC will help demonstrate how the use-values as well as non-use-values of cultural heritage can benefit people and incorporate in communities' sense of place as an attribute of wellbeing (Potschin and Haines-Young, 2012; Milcu et al., 2013). This study will shed light on cultural heritage as non-market goods (MEA, 2005) and their significant role in people's life.

The following section contains a review of literature on sense of place and explores its contribution to understanding fishing communities.

3.2. Fishing heritage and the traditional waterfront

Fishing involves certain human adaptations and behaviors, which necessitates the development of certain cultural characteristics (McGoodwin, 2001). These adaptations require exploiting particular marine ecosystems with whatever technologies a group of people have access to or can develop at a particular time (FAO, 2013). These technologies, the use of the land and sea, and human behavior inevitably create cultural material (Fisheriesheritage website; Ome, 2007-8; Malpas, 2008; Crist, 2004; Robertson et al. 2005)

Although fish are often considered as the primary source of livelihood, multiple ecologic-socio-cultural-economic components of this way of life create value out of such factors as sense of place (ICSF, 2011; Acott and Urquhart, 2014), identity, and pride (Felt, 1995; Pollnac, 1988 Brookfield, 2005; Van Ginkel, 2001; Nuttall, 2000; Tango-Lowy & Robertson, 1999; Claesson et al, 2005). Several studies on fishermen in the coastal areas have demonstrated that tangible and intangible cultural values associated with fishing are of high value for fishermen (Van Ginkel, 2001; Nuttall, 2000; Pinder, 2003; Chan et al, 2012; Acott and Urquhart, 2014; Bradley et al., 2009; EH, 2007). The previous studies showed that there is major public interest in conserving fishing cultural heritage, and fishing communities can and do benefit socially and economically from their cultural heritage (Claesson et al, 2005).

3.3. Sense of place and place attachment

In the field of social science, many studies have been conducted on how places are socially constructed, the role of place in identity and how people become attached to place (Altman and Low, 1992; Relph, 1976; Creswell, 2004; Giesecking, 2014). Sense of place covers a range of ideas including place attachment, place identity, place dependence and place meanings (Relph, 1976; Tuan, 1977; Proshansky et al, 1983; Low and Altman, 1992; Creswell, 2004; Farnum et al., 2005; Lawrence, 1990; Kaltenborn, 1998). Place attachment is concerned with the emotional attachments that people form with places (Hidalgo and Hernandez, 2001). Place identity is associated with the meanings that people attribute to places through their experiences, memories and beliefs about a place (Nora, 1984-1992; Tuan, 1974; Harvey, 1993; Anderson, 2015; Harvey, 1996; Nora, 1984-1992; Halbwachs and Coser, 1992). Place dependence is associated with how well a place is suited to the needs or activity of an individual group

(Hunziker, 2007). Sense of place attachment depends on the strength of emotional meanings that groups of people and individuals associate with a place and a particular setting (Relph, 1976; Gieseeking, 2014; Hummon, 1992; Stedman, 2003; Benoni, 2010). Places are defined by physical and natural environment, and material reality (Casakin, & Bernardo, 2012; Stedman, 2003) combined with the meanings that people associate with them. (Jorgensen and Stedman, 2001; Stedman, 2003)

Place attachment is also associated with well-being. Evaluation of the sociocultural significance of these places is a way to market the vernacular, simulate the authentic, and invent or preserve heritage and tradition (Harvey, 1993).

3.4. Attributes of Sense of place for investigating the role of fishing heritage in communities' place attachment

Previous studies regarding sense of place (Connerton, 1989; Shackel, 2006), recommend some attributes in regards to the values of fishing material culture and cultural entities regarding place attachment, place identity and sociocultural memory. In the discussion that follows, these attributes are assessed in relation to the cultural material and physical entities existing in fishing communities in Brunswick County in order to evaluate the non-market values of fishing heritage in these communities. Table 3.1 shows these attributes, which have been used in the present research for shaping the interview questions in order to evaluate the significance of material culture in the mentioned fishing communities.

Non-market benefit	Attributes	Sub—attributes
	Place attachment	Connection with the sea
		Connection with the environment
	Place identity	Fishing as a way of life Contribution of fishing in shaping community identity
		Fishing influences place character through special materials, tools, symbols, decoration, buildings, etc.
	Place memory	Memory of the past fishing activities
		Memory of the past traditional fishing places

3.5. Commercial fishing communities in Eastern North Carolina

For over 200 years, North Carolina's coast supported a successful commercial fishing industry and communities of citizens who relied on the industry for their livelihood (NC Sea Grant, 2007). Brunswick County, which was formed in 1764, has a long history of fishing in the ocean, bays, sounds, rivers, and lakes (Pedlow, 1997). It was named for the colonial port of Brunswick Town (now in ruins). The European merchants who settled here traded fish, among other commodities, and participated in other activities related to fishing, such as ship-building (Lee, 1980; Special staff of writers, 1919).

Brunswick County still has a large number of fishing communities. Fishing activities are linked to material culture such as boats, fish houses, ship yards, crafts, as well as rituals, cuisine, and traditions related to fishing and seafaring. These remains are a part of ongoing life tradition and are considered as cultural resources. However, due to the changes in the use of resources and land/sea-use regulation and policies, development and climate change, many of these sites are endangered. This suggests that some management of these resources may be necessary.

Archival and literature review, followed by site observation, showed that there are still several fishing communities and towns in Brunswick County, among which four have been selected here for closer analysis: Holden Beach area, Sunset Beach (and Shallotte), Oak Island and Southport [Fig. 3.2].

3.6. Case studies

In order to understand the way that fishing cultural heritage influences fishing communities in North Carolina, a case study approach was adopted to explore the social well-being variables in a range of different fishing communities with different amount and state of cultural heritage in the southeastern counties of NC. Case studies are not meant to be representative of wider sociocultural phenomena but can instruct us about relationships among cultural heritage and specific human behaviors, perceptions, and activities. They are not, that is, surveys, censuses, or other types of inquiry that strive to represent larger populations, but trade quantitative representativeness for qualitative depth.

In the four areas, after site observation and based on their different socioeconomic conditions, four fishing, shrimping, and oystering communities were selected. Varnamtown has been chosen as the most

vivid and active community and due to its reputation for fishing. However, a decline in commercial fishing can be noticed in the area (The N.C. Division of Marine Fisheries Reports⁹). Holden beach also was chosen due to the fact that there is an ongoing fishing community and the community is trying to preserve commercial fishing. Southport was chosen due to its importance as a former fishing community which is now more of a tourist destination with remnants of commercial fishing remaining around its single fish house. Shallotte was chosen because it was locally known as a fishing community with two fish houses still active, but in decline.

3.7. Methodology

The study benefited from interviews with fishermen in different communities with different levels of fishing cultural heritage presence and preservation. The interviews included open-ended and closed questions. Open-ended questions are those questions that solicit additional information from the inquirer. By definition, they are broad and require more than one or two word responses, or a series of choices. Close questions are those that can be answered by either “yes” or “no, a number on a scale, or some other

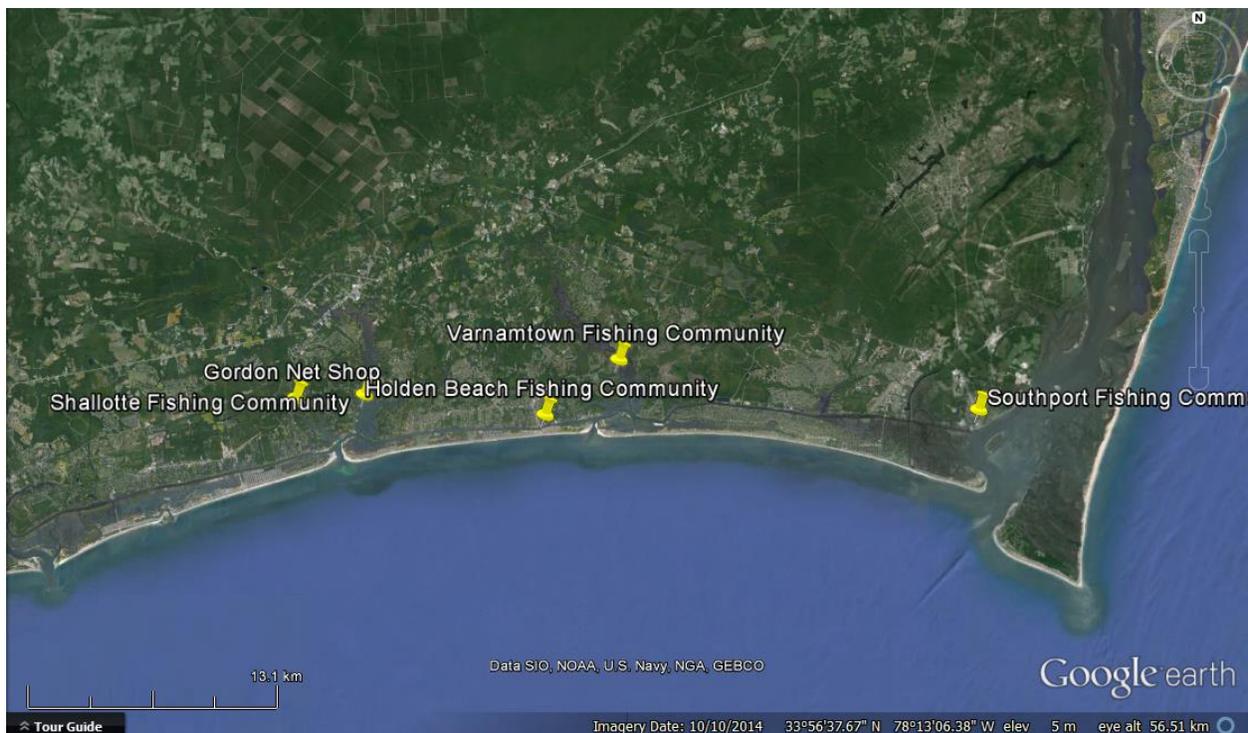


Fig. 4.2: The location of different fishing communities, fish houses, commercial fishing docks, net shop and seafood market

⁹ portal.ncdenr.org/web/mf/marine-fisheries-catch-statistics

simple response. The units of analyses are the fishing communities. The responses were analyzed with qualitative and quantitative methods.

To gain an understanding of the contribution of fishing to sense of place, an inventory was made regarding the physical characteristics and activities associated with fishing that contributed to a sense of place. Elements such as commercial fishing boats in the harbor, building type, presence of fishing gear and facilities in each community were recorded. The cultural values of these elements were assessed based on the criteria mentioned in National Registered Criteria ("How to Request and Submit a Study List Application", 2016). In addition, according to North Carolina Division of Cultural Resources, individual buildings, sites, areas or objects which are studied by the Preservation Commission and judged to have historical, architectural, archaeological, or cultural value, and that the community believes the property deserves recognition and protection can be designated as Local District or Local Landmark, depending on their cultural, historical, architectural and archaeological values ("A Comparison of the National Register with Local Historic Designations", 2016). This information was used, together with the data collected from the interviews, to explore the significance of fishing material cultural and built heritage in place attachment, place identity and place memory in shaping sense of place among fishermen.

In the design of interview questions the attributes of sense of place from Table 3.1 were used to inquire if and how different fishing material cultures and build heritage contribute to different sub-attributes of place attachment, place identity and place memory. In addition, the questions were designed to direct the interviewees to talk about their level of satisfaction with their job, their interest in keeping fishing as their main occupation, and the future generation's occupation choices. Previous studies showed that one constraint on the survival of fishing communities is the reluctance of the new generation to pursue fishing as their main occupation (Piriz, 2000). The answers to these questions helped further to analyze the correlation between the amount and state of existing material culture and the state of fishing in these communities. Since fishing as a traditional activity helps shape fishing heritage and the cultural landscape, in addition to livelihood (Nuttall, 2000), the interviewees were asked to state what types of material culture or/and heritage sites and buildings are important to them as items that depict fishing communities and sense of place, fishing activities and fishing characteristics, and fishermen's memories.

These statements were gathered through a combination of in-depth interview and photo elicitation. By applying content analysis, these data were analyzed to identify the items of cultural heritage significance for the fishing communities. In addition, the values associated to the cultural heritage items were categorized based on different heritage values for the fishing communities' members. Also, the correlation between the quantity of fishing heritage site and fishermen willingness to stay in their present location regardless of their occupation was investigated. (Appendix 3.1. lists the interview questions given to the fishermen).

For the purpose of assessing place attachment and place memory in the member of local communities, I handed out cameras to residents to take photographs of places they deemed important to their sense of identity and place, a method known widely as 'resident-employed photography' (Stedman et al, 2004) or 'photovoice' (Wang, 1997). To interpret the photographs, in-depth interviews are critical because they allow both researchers and participants to "better elucidate the content of the photo and the degree to which it represents sociocultural and ecological phenomena, and how these combine in potentially unique ways" (Stedman et al., 2004, p. 586). Visual approaches to data collection are beginning to gain traction in both tourism (Kerstetter & Bricker, 2009) and outdoor recreation (Dorwart et al., 2010) contexts (Benoni et al, 2010). The photos and interview text are analyzed using a process known as categorical aggregation, a series of techniques using labels, codes, and categories to organize qualitative data (Dewalt & Dewalt, 2002; Henderson, 1991; Mascarenhas & Scarce, 2004; Spradley, 1980). (The results of photo elicitation are presented in Appendix 3.2)

The first step of analysis is to determine places of importance. The second step is to determine the meanings and experiences behind each of these place categories, using interviews as descriptive guides. Important meanings and experiences from photos and interviews should be indicated by the photographer. This method of inquiry allows participants to identify places that hold values and meaning for them and to explain that meaning in present fishermen life rather than responding to researcher's prompts about place (Amsden et al, 2010).

A spatial analysis also was conducted in order to identify variables that can define the level of importance of fish houses based on their location, function, and access. Some results from interviews, in addition to

direct observation of these locations were applied for this analysis. The preliminary locations of the fishing harbors and fish houses were selected based on the literature and existing data from North Carolina Sea Grant reports (Jepson et al, 2005). The key informants were selected based on pre-studies and knowledge about the locations of the fish houses and fishing harbors. First each known fish house was visited in the case study areas. The fish house owners were interviewed. The rest of sampling was done using the snowball method, where participants recommended other potential informants (Babbie, 2010).

3.8. Results

3.8.1. Results from interviews

In table 3.2 the list of interviewees is presented, and following that the results from in-depth interviews are discussed.

Varnamtown							
	Name	Code	Location	Age	Gender	Education	Role
1	J.Var		Varnamtown (Garland)	65	F	Some college	Fish house/market owner
2	A.Var		Varnamtown (Beacon)	55	M	High school	Fisher
3	R.G.Var		Varnamtown (Garland/Beacon)	72	M	High school	Owner
4	J.B.Var		Varnamtown (Beacon)	40	M	High school	Fisher
5	M.G.Var		Varnamtown (Garland)	69	M	High school	Fish house/market owner
6	D.B.Var		Varnamtown (Beacon)	82	M	High school	Fisher
7	E.C.Var		Varnamtown (Beacon)	75	M	High school	Fisher
8	D.G.Var		Varnamtown (Beacon)	71	M	High school	Fisher/owner
9	J.R.Var		Varnamtown (Beacon)	40	M	High school	Fish house/market owner
10	Ma.G.Var		Varnamtown (High Rider)	50	M	High school	Fisher (Son of owner)
11	J.C.Var		Varnamtown (High Rider)	42	M	High school	Fisher
12	B.G.Var		Varnamtown (High Rider)	67	M	College	Fisher
13	L.G.Var		Varnamtown (High Rider)	40	F	High school	Fisher/owner (Wife)

Shallotte							
	Name	Code	Location	Age	Gender	Education	Role
1	S.S.Sha		Shallotte (Ocean View Restaurant)	40	F	Some college	Restaurant owner
2	W.T.Sha		Shallotte (Boat yard)	51	M	High school	Boat yard owner
3	M.P.Sha		Shallotte (Around Restaurant)	53	M	High school	Fisher
4	G.W.Sha		Shallotte (Net shop)	27	M	High school	Net shop worker
5	M.S.Sha		Shallotte (Individual fisher)	60	M	High school	Fisher
6	S.Sson.Sha		Shallotte (Individual fisher)	28	M	High school	Fisher
7	R.S.Sha		Shallotte (At restaurant)	41	M	High school	Fisher
8	T.M.Sha		Shallotte	45	M	Some college	Fisher (Son of Lloyd)
9	B.J.Sha		Shallotte	61	M	High school	Fisher
10	J.H.Sha		Shallotte (Holden Seafood)	42	M	High school	Fisher
11	Mr.L.Sha		Shallotte (Lloyd's)	83	M	8 th Grade	Oyster house owner
12	T.L.Sha		Shallotte (Lloyd's)	34	F	Associate degree	Oyster house owner /worker(Lloyd's daughter)
13	B.G.Sha		Shallotte	57	M	High school	Net shop owner
14	Sh.Sha		Varnamtown	29	M	High school	Fisher
15	MM.J.Sha		Varnamtown	22	M	High school	Fisher

Southport							
	Name	Code	Location	Age	Gender	Education	Role
1	D.L.Tat		Tatum fish house	45	M	High school	Fisher
2	A.T.Tat		Tatum fish house	51	M	10 th Grade	FH owner
3	Ch.Tat		Tatum fish house	22	M	High school	Fisher
4	J.H.Tat		Oak Island Haag & Sons Seafood	(??)	M	College	Market owner
5	Ch.L.Tat (Tater)		Tatum fish house	30	M	High school	Fisher
6	Alex Tatum		Tatum fish house	23	M	High school	Son of FH owner
7	J.P.Tat		Tatum fish house	57	M	11 th Grade	Fisher
8	R.B.Tat		Tatum fish house	64	M	8 th Grade	Fisher
9	Tim Walters		Tatum fish house	34	M	High school	Fisher
10	Tara (?)		Tatum fish house	45	F	High school	Fisher
11	Albert Doshier		Tatum fish house	56	M	Some school	Fisher
12	Charles (?)		Tatum fish house	44	M	High school	Fisher
13	Terry		Tatum fish house	40	M	High school	Fisher
14	Kenneth Fex		Tatum fish house	44	M	College	Fisher

Holden Beach							
	Name	Code	Location	Age	Gender	Education	Role
1	J.P.Hol		Finz & Tailz	31	M	High school	Fisher
2	R.B.Hol		Finz & Tailz	69	M	High school	Fish market owner (father)
3	B.B.Hol		Finz & Tailz	67	M	High school	Fish market owner (Mother)
4	A.R.Hol		Old Ferry	50	F	High school	Owner (wife)
5	P.R.Hol		Old Ferry	52	M	High school	Owner
6	R.C.Hol		Sons of the Sea/Black Dog Seafood	45	M	High school	Market owner/fisher
7	T.E.Hol		Capt. Pete	36	M	High school	Market
8	NN.Hol		Finz & Tailz	42	M	High school	Fisher

The above tables outline the general features of the study population. Most of them have finished high school and a few have had some college. They are engaged in seafood sales, boat repair and construction, fishing (fishing, oystering and shrimping), processing and packing, and a net shop. Except for a few, most of them have always been engaged in the fishing business since they were very young, as part of a family business.

There are three active fish houses in Varnamtown, two in Shallotte (one specifically is an oyster house), only one fish/ice house in Southport, and three fish houses and one seafood market in Holden beach. Varnamtown also has a few places where people sell seafood directly from their homes. This is an evidence of the population's attachment to marine resources. The fish houses in Varnamtown, Shallotte and Holden beach have market places adjacent to them which are in regular contact with public, and some of them also send out of state. But the fish house in Southport is a wholesale fish house that buys from local fishermen who land at its dock and sells both locally and nationally. Some seafood markets in Holden Beach and Oak Island buy from the fish house in Southport too. Other buildings around the current fish house in Southport were originally fish houses, but they have been transformed into seafood restaurants. Surprisingly, these restaurants do not get their seafood from the local fish house.

In Varnamtown and Shallotte, their main catch is shrimp and oyster, while in Southport and Holden Beach different types of fish in addition to shrimp and oyster are caught. They usually work with two to five crew on a boat. Some work with family members, and some not.

Fishermen are quite satisfied with fishing and some in Southport claim that during last year (since 2014) there have been more fish, and one should know where to fish. They describe fishing to be a hard and risky profession with long hours at sea and far from family. However, they like it and enjoy doing it, because of excitement, anticipation and surprise; being out on the ocean and the connection with water; and independence. Some have no other skills to do other jobs.

Some fishermen mentioned that they changed their gears and/or adapted their boats for new fishing conditions, or switched to catch other types of fish due to the changes in regulations, and seasonal and natural factors. Some sell their catch locally at a certain fish house, but some go further from Pamlico Sound to the Gulf of Mexico. One person from Shallotte, who is very successful in his business, stated that he has always looked at the market and condition and tried to change and adapt to the situation.

They consider fishing as their way of life, continuous family vocation and a tradition that should be preserved. For most of them it is important to continue fishing as their main occupation. All people who were interviewed in Varnamtown stated that it is a strong fishing community where everybody in it is connected to fishing in one way or another. This fact, about Varnamtown, has also been confirmed by fishermen from other locations as well. The majority of interviewees from Shallotte said that the fishing community is not as strong as it was before and it is a vanishing community. In Southport, fishermen have a great sense of attachment toward Southport. For many, the old waterfront is a highly valued memory. For example, K.F. says:

“This place holds the tradition. The whole waterfront: the maritime museum, the Old American Fish Company, the name of Frying Pan, the tower in the sea, all show history and I have memories from my childhood and youth here.”

Another interviewee says:

“The waterfront here holds memories of fishermen and their families. The dock here reminds me of my youth and my memories of that time.”

In Varnamtown they stated that although outsiders might not completely understand the hardship of commercial fishing, they interact with the wider community on a regular basis and they believe that they

usually receive the respect and attention that they deserve. In Shallotte, they believe that they are connected with the wider community who are not in fishing, but outsiders do not have a complete understanding of their job and its hardships. In Southport fishermen are not socializing with the newcomers to the area. In Holden Beach fishermen have a good relationship with outsiders and consider them important for their business.

In Varnamtown, the Oyster Festival is a social activity held every year. This activity brings many different people together, which is a good opportunity to learn about marine resources, commercial fishing, fishermen and their tradition as well ("PEOPLE AND PLACES: Coastwatch", 2016). In addition, fishermen in Varnamtown, usually, gather at the three fish houses at the dock and there is one picnic area and Garlands Seafood where many said they gather. They stated that fishermen are well connected through phones and radios, and they enjoy a sense of solidarity that exists among them.

In Shallotte the opinions were different. Fishermen at Larry Holden's stated that there is no network among them and they would not share information about the location of fish and good catch. By contrast, the fishermen at Lloyd's Oyster House and the Inlet View Restaurant feel there is a good network among them, and that they share information about the fish and their catch. Their usual gathering locations are the restaurant, net shop, or Lloyd's oyster house.

According to the interviews, commercial fishing contributes strongly to the character of Varnamtown. It is obvious from the fish houses, fishing boats at the dock, the fishing gears laying around, as well as decoration motifs at houses in the town. People believe that, with the loss of fishing in Varnamtown, developers will take over and the area will lose its identity as a fishing community. For them, and also most other interviewees in other fishing communities, the existence of fish house is not only a symbolic sign, but also a material manifestation of their fishing community. The boat rail in Varnamtown and Gordon net shop in Shallotte are the last of their kind in Brunswick County. Most interviewees, in all four communities, believe that the fish houses and some structures associated with fishing should be preserved as historical landmarks or areas, and become part museums, even if the fishing stops

completely. This is important because these waterfronts show parts of the history of this area and its people¹⁰.

In Shallotte, members of fishing community had different views about the character of the area. Some stated that fishing played a great role in shaping the character of the area before, but now is gone. On the contrary, the fishermen around the oyster house believe that the character still exists and can be seen in fish houses, docks, boats, and the net shop. As in Varnumtown, they believe that if fishing stops, people would leave and development would take over. One reason that they consider caused decline in fishing in Shallotte is that the river in Shallot is no longer deep enough for the bigger boats to get to the two fish houses there. Some of the fishermen stated that even the inlet is not suitable to pass through.

In Holden Beach, fishermen's memories of traditional fishing related mostly to Southport. For them Southport has been the representation of a perfect fishing town. In addition to Southport, Old Ferry Fish House and the Holden Beach waterfront also convey strong memories related to commercial fishing.

Most people prefer to keep fishing as their primary occupation, even though some combine it with other work and some stated that they are not willing to switch to other jobs, even if they found it more profitable. But mainly they see no future in fishing and there are different points of view in encouraging younger generation to get into fishing. Those who encourage future generation to be engaged in commercial fishing, see the profession not as the primary way of livelihood. They would like to see that the legacy of commercial fishing will be transferred to future generation, but they feel that it will not be enough to make a living.

Some think that tourism can bring some benefit to them, and are willing to consider the options of getting involved in tourism. Some are willing to explain their work to visitors, some stated that they can arrange for short trips, showing visitors how commercial fishing is done. But several fishermen were against the idea of getting involved in tourism and they see tourists as disruption to their work.

¹⁰ Historic preservation is usually the task of Federal or State Government. Here fishermen statements were general. The aim was to see if they see any historical and cultural values in these places that justify preservation policies for future.

The results of interviews are summarized in the following charts. Figures 3.3 to 3.7 show the items of fishing character, fishing memory, items representing sense of place, significance of fishing for the communities, and existing sense of community among the members of fishing communities. In general, the interviewees stated that fish houses and fishing maritime landscape including boats and docks are the most significant aspects of build environment for them. Enjoyment was stated as one of the main reasons that the fishermen continue fishing. Figure 3.8 demonstrates how many of older members of fishing communities encourage new generation to engage in commercial fishing as their main occupation for future. It is noticeable that in different communities, the level of encouragement varies. In Varnamtown and Holden Beach majority of interviewees indicated that they would encourage the new generation to pick fishing as their main career or side-career, but in Southport and Shallotte it was the opposite.

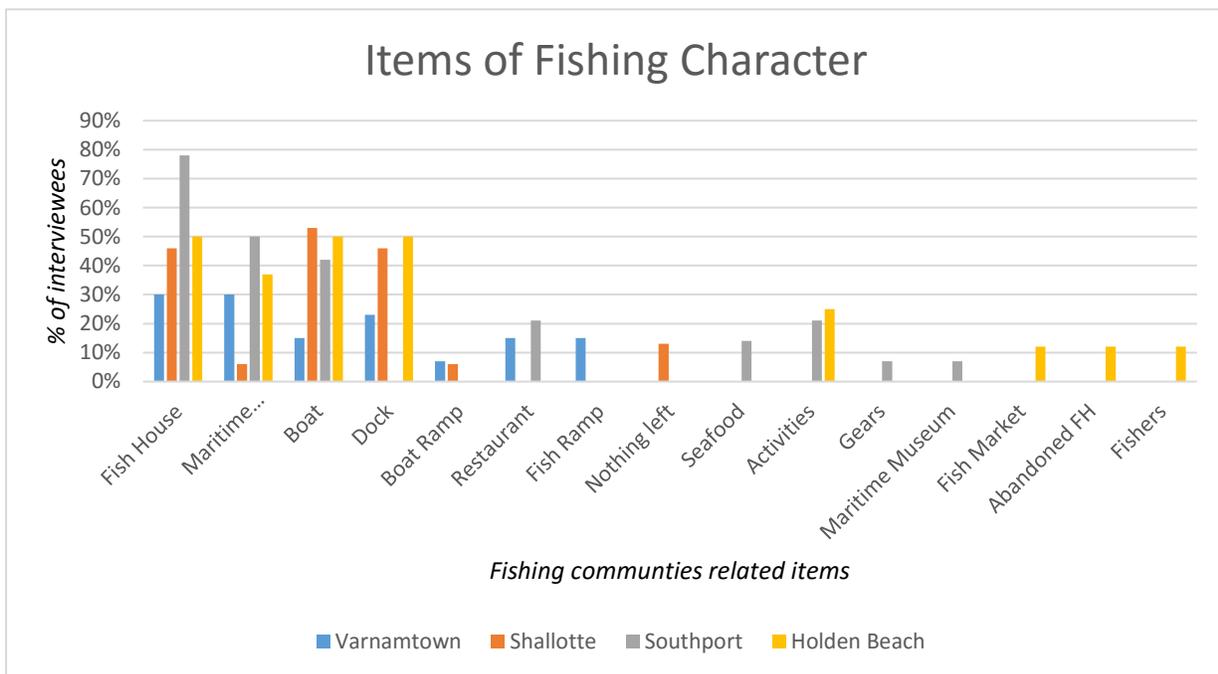


Fig. 3.3: Shows the percentage of interviewees who listed different items of fishing character. With some variations in the level of importance, based on the interviews in the four case study areas, fish houses, boats and docks, as well as the entire maritime landscapes are considered as items that represent fishing character. It is interesting to notice that in Southport and Holden Beach some people mentioned that ongoing fishing activities is what represents fishing character of a place. Considering that these four areas had some different types of buildings and businesses, some interviewees highlight those items in their area such as Maritime Museum in Southport and abandoned fish house in Holden Beach

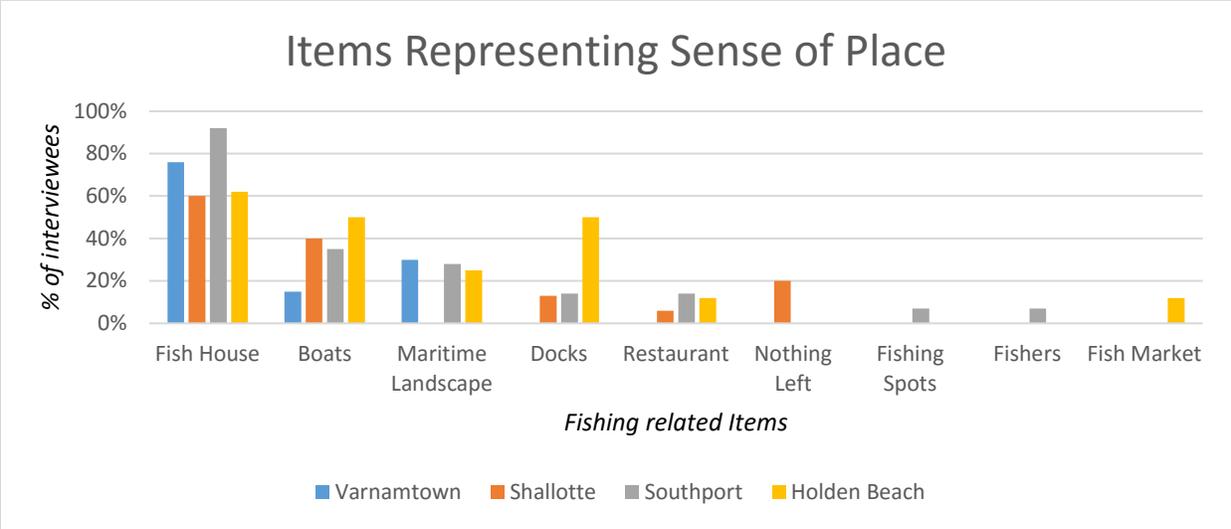


Fig. 3.4: With some variations in the level of importance, most interviewees consider fish houses as the main items representing sense of place in fishing communities. In addition to fish houses, boats, the entire maritime landscape, and docks have been stated as elements of sense of place in some of these four communities. In Shallotte there was some stress on the fact that there is nothing left.

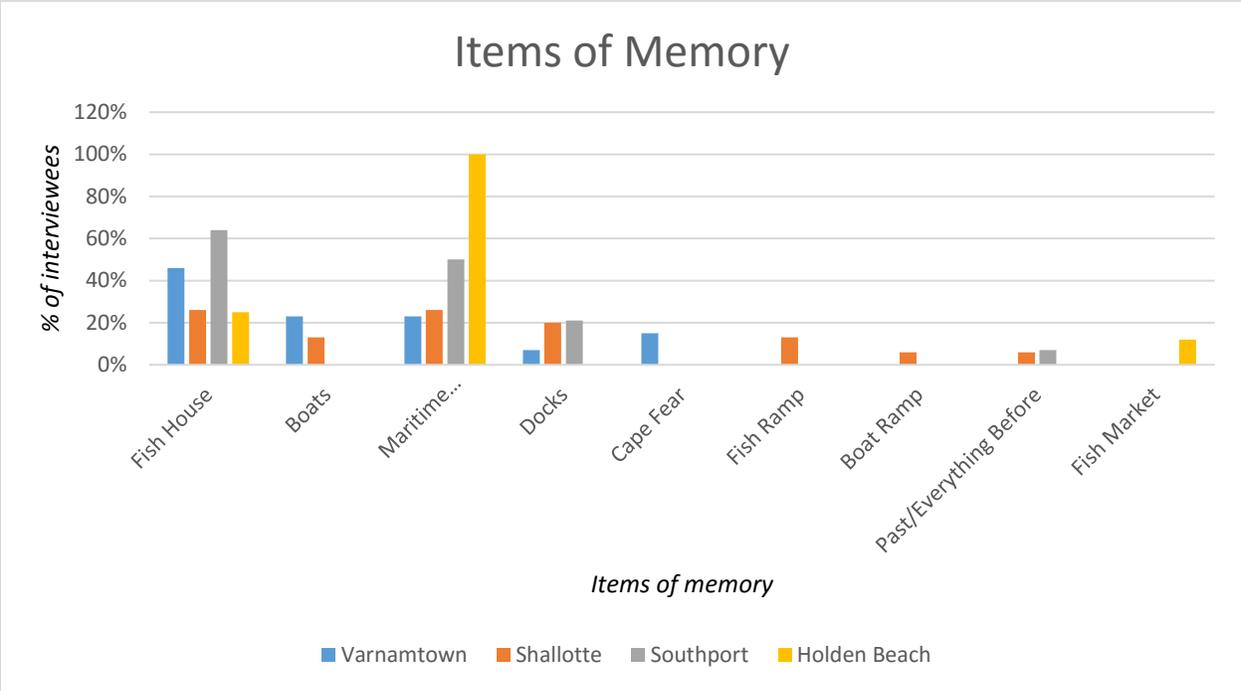


Fig. 3.5: Most interviewees stated that fish houses are a memorable item. They have stated that they have their memories of childhood and youth as well as at fish houses around Shallotte. In addition, docks and boats are also of high level of reminiscence for them. Several interviewees mentioned that they have memories of the time that there were all fish houses along the water and boats were going and coming, however, they do not exist anymore.

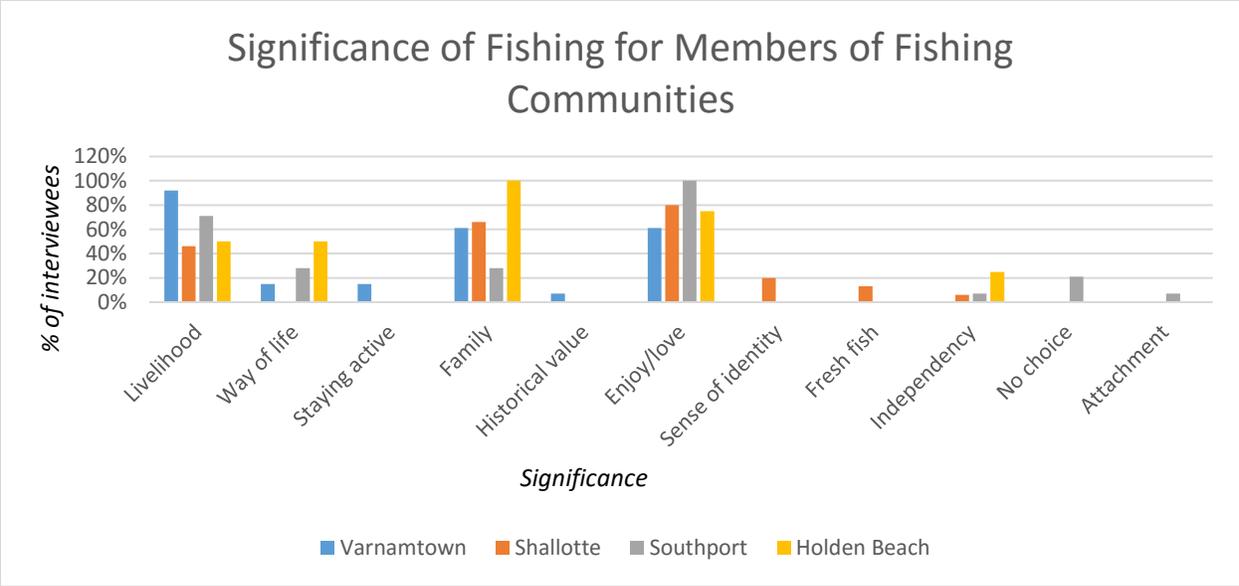


Fig. 3.6: most people associated the significance of fishing with enjoyment. Although, several mentioned that as a family business they started and are continuing it and it is their livelihood as well, enjoyment was the most mentioned factor of continuing fishing

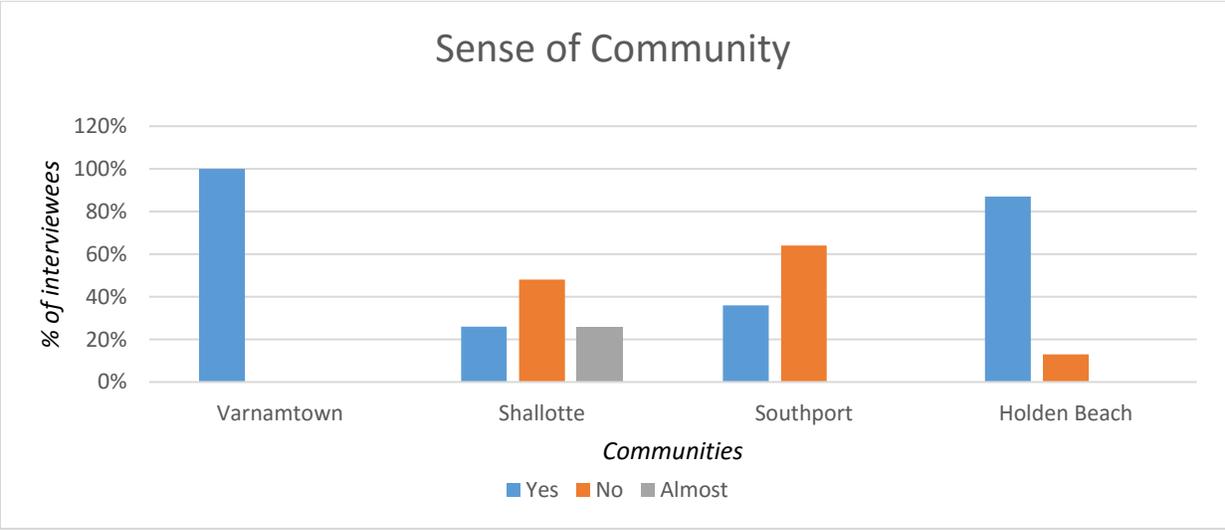


Fig. 3.7: Shows the percentages of interviewees who agreed or disagreed about the existing of sense of communities in their area.

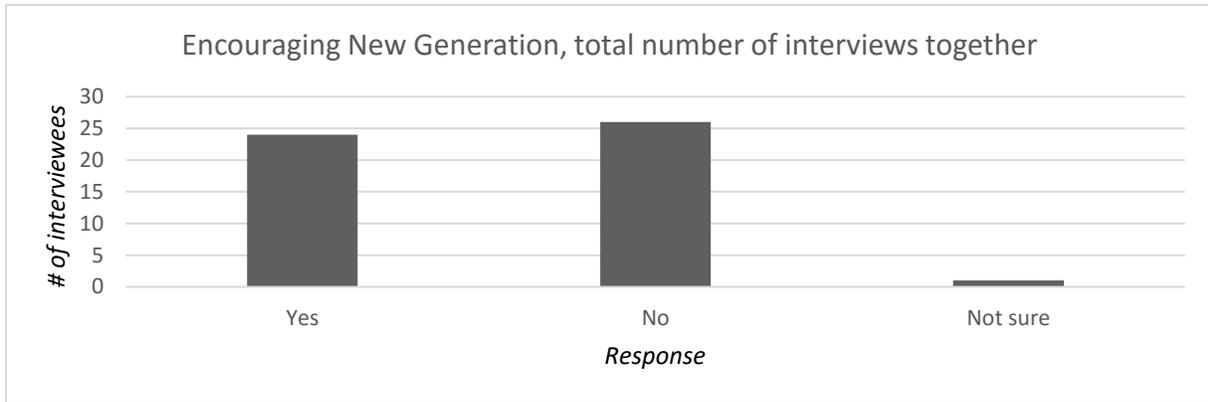


Fig. 3.8: Although most people who were interviewed showed content about commercial fishing, the majority would not encourage the new generation to continue commercial fishing as their primary occupation. However, many still encourage new entrants too.

3.8.2. Results from Photo elicitation

The photo elicitation combined with in-depth interviews about the pictures that they have taken showed strong concordance with the results from the first set of interviews. Conducting photo elicitation among members of fishing communities highlighted three main items that are of significance for this fishing community: fish houses, boats, docks and maritime landscape [Fig. 3.9].

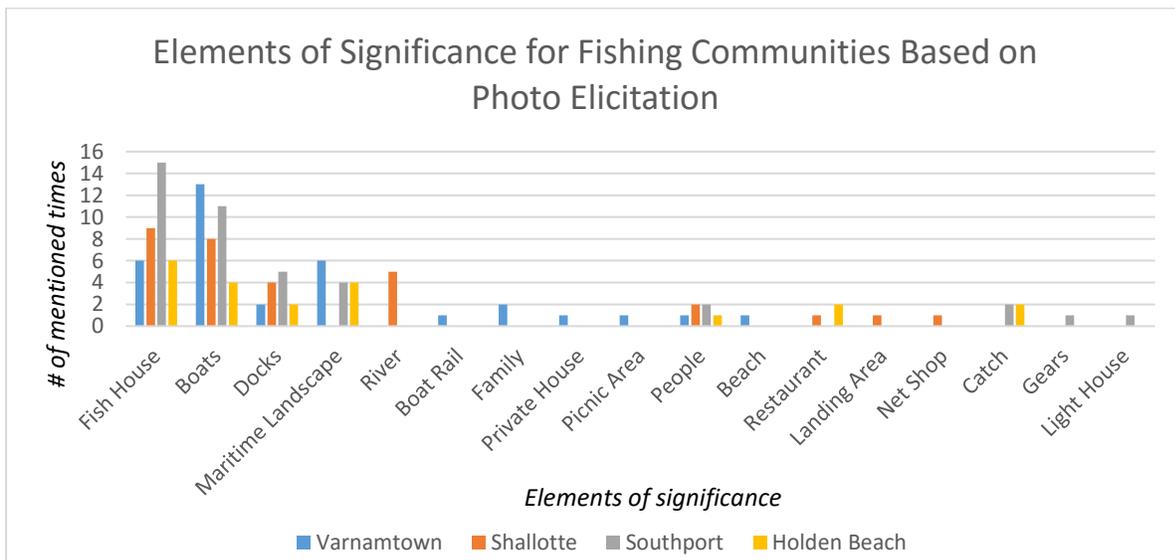


Fig. 3.9: Base on the results from photo elicitation, fish houses and boats are the main elements that interviewees consider significant for their fishing communities. Based on different elements existing in other areas some people mentioned different items. E.g. picnic area and boat rail in Varnamtown and net shop in Shallotte. It is interesting to see that people in Shallotte mentioned river as an element of significance and this is due to the fact that their connection to the sea depends on this river.

According to the photo elicitation, boats, either fishermen's own boats or fishing boats in general have one the highest level of significance for fishing communities. They are associated the boat with fishing traditions, memories and their identity, with their livelihood and daily activities and life. For example, for Alex, a fisherman from Beacon Fish House, boats are important and he states that:

"I would take a picture of the wooden boats that come in full of shrimp. That shows the whole industry. They are reminder of the old fishing and shrimping that fading away, they are showing the work and tradition." [Pic. 3.1]



Pic. 3.1: High Rider, one of the oldest shrimper in Brunswick County.

However, boats are moveable objects. Among the fixed (immoveable) items that shape the maritime landscape, fish houses are the most mentioned items of cultural

heritage values. Based on photo elicitation, fish houses are in the highest level of importance for fishing communities. According to the interviews fish houses are the most significant elements of memory, sense of place and fishing character in fishing communities. They consider fish houses as buildings that represent fishing and seafood industry. Fish houses represent a place where they work, sell seafood, and sometimes it represents a place where their life have shaped around it with their families and friends working in them.

One of the fishermen in Varnamtown states that:

"I took a picture of fish houses, because I work here. Any of them is history. All of them are the same to me. All we have the same occupation. It shows hard work and a lot of fun, talking while working, telling a lot of lies."

Jay Robinson, the owner of Beacon Seafood states:

"I took a picture of my building [Beacon Fish House]. It is the only thing that has not been changed in my life. I spend 90% of my time here. I am very satisfied with my life and career." [Pic. 3.2]



Pic. 3.2: Beacon Seafood (a fish house and seafood market).

Mr. Garland and his wife Jackie, who own the Garland Seafood took a picture in front of their own fish house. He states that:

“I would take a picture of my wife and me at our fish house, because we have worked here all our life together. It is full of memory.” [Pic. 3.3]



Pic. 3.3: Mr. and Mrs. G. in front of their fish houses: Garland Seafood.

Those who took photos from the whole landscape, mentioned several reason for that, stating the aesthetic values of the fishing landscape, as well as the importance of documenting a part of history and a traditional activity that is fading away.

Ronald Galloway from Beacon Seafood states that he would take an aerial picture of the area around Varnamtown fishing docks:

“I would take an aerial photo of all the area around here. You could see the general area, you could look what are happening, and you could see everything.”

He also took a picture of the dock and boats tied up at the fishing house dock and stated:

“They are interesting, to show people where we work, what we do. In future they will see where we were one day. Keep it for keep sake. Everything has been changed and all will be changed in 50 years. It will remind to what it was before.” [Pic. 3.4]



Pic. 3.4: Shrimp boat at the dock at Beacon Seafood.

One site that is particular to Varnamtown is the boat rail. Although this site is the only of its kind in this area, it was not considered as an element of significance, memory or fishing character in the interviews. However, only one person mentioned it in the photo elicitation and took one photo of the site and stated:

“The boat rail is where the boats pull out. It is the only one from Florida to Wancheese. There used to be 15 of them, but now only this one.” [Pic. 3.5]

In Shallotte, there has been a focus on river as an element of significance for fishing which shows the connection that fishermen feel with the water and natural environment. Fishermen see the docks as an element of significance which shows the fishing activities such as docking, loading and unloading fish.

Mitchel Smith, a fisherman from Shallotte, took a picture of Larry Holden’s seafood and states that:

“This is Larry Holden’s Seafood. This building is important, because it has been there so long and that’s one of the only things left.”

Another photo from the same building has been taken by Gordon Winfree who states:

“Larry Holden’s seafood reminds me of old ways of fishing. He has shrimp boats.” [Pic. 3.6]

People who suggested the river and took a picture of the river and the natural environment, were more concerned about the way that the original state of the river has changed and emphasized the negative



Pic 3.5: The boat rail in Varnamtown, the only commercial boat rail around Brunswick County.



Pic. 3.6: Holden Seafood in Shallotte

human impact on the quality of the river. One person also remembered the good old times from the river and the natural environment, when he and his wife sailed on the river.

The unique place in Shallotte is a net-shop. It was mentioned in the interviews and also showed up in the photo elicitation study. For instance, Stanton Smith took a picture of a part of the net-shop building with nets hanging out. He associated the net with the feeling of fishing and water, and states:

“Gordon’s net shop is important, because of what they do. They hang nets and it gives the feeling of fishing and water.” [Pic. 3.7]



Pic. 3.7: Gordon net shop in Shallotte, one of the last net shops that its primary occupation is net making and net mending.

Tatum fish house was mentioned as the sole place in Southport that fishermen can sell their fish and mostly people took picture of that particular fish house [Pic. 3.8]. This building carries values for many of them since this fish house is the last standing and active fish house in Southport. They consider this

building representing fishing character and sense of place in Southport at the moment. For example, Alex Tatum took a picture of the fish house and says:

“Tatum fish house is our landmark in Southport as the last working fish house.”

John Porter states the reason of taking picture of Tatum fish house as:

“Because I sell here, and it is the only one left here.”

Some also took pictures from the buildings that had before been a fish house, and now are restaurants.

For example, the Old American Fish Company, which is a restaurant now, is considered of great value. The building is the oldest fish house in Southport and listed as historical property.

Other elements that are of significance for fishing community at Southport as part of their heritage, are the dock and boats, which are almost in the same level of value for the community.

For them boat is what takes them to the sea and is a vessel which helps them catch food. For example, Chris took a picture of a boat and says:

“Boat, any boat that I go fishing with. It is a vessel to catch fish with.”



Pic. 3.8: Tatum fish house.



Pic. 3.9: Donald Lowe's boat

Donald Lowe took a picture of his own boat and states:

“Because it is mine and I fish with it.” [Pic. 3.9]

Trey took a picture of the fishing dock and states:

“The dock here at Southport reminds me of my youth and memories of then. And the time that it was a fishing town.”

[Pic. 3.10]



Pic. 3.10: The recreational dock at Southport

Their pictures of the boats mostly have a prominent view of the docks, especially the dock at Tatum fish house, as well.

For Southport fishermen, the significance of fishing heritage and the physical remains from traditional fishing are mainly due to the fact that these remains show the fishing activities and their work which is the source of their livelihood. Although, they do not consider Tatum fish house as a historical building since it is a new building, they state that it is of traditional significance because it is the only building that shows the ongoing tradition of fishing and they associate it with old fishing town of Southport and a building that shows the sense of place. The members of Southport fishing community have a strong sense of memory from the past fishing town of Southport.

Many people interviewed took photos of seafood and fish being landed times and interviewees stated that the friendly competition of catching the most and biggest fish has always been a part of tradition in Southport.

The result of photo elicitation from Holden Beach fishing community shows that the elements of fishing heritage that are of the greatest significance for the community in addition to fish houses and boats are maritime landscapes. Although, the observation from Holden Beach reveals a unique fishing community there, most interviewees referred to Varnamtown and Southport and their different buildings as examples of a fishing town and fishing heritage. For example, Frying Pan Tower and Old American Fish Company from Southport were mentioned a few times and they took pictures of these buildings. However, more specifically, in Holden Beach, the maritime landscape around Old Ferry Seafood was mentioned several

times. Anna, one of the owners of Old Ferry Seafood, took a photo from the other side of the river towards their fish house and the boats and states:

“The dock and boats here is what everybody takes picture of it. It shows our work. From the other side of the river” [Pic. 3.11]



Pic. 3.11: Old Ferry Seafood and the surrounding maritime landscape in Holden Beach area.

One specific site at Holden Beach is an abandoned fish house and a partially submerged boat in front of it. Travis Elliot took a picture of this site and states:

“The old fish house and the boat show the history and the career that is vanishing. It is the memory of people who lived here and worked here as fishermen.”

In addition to the common significance of activity, work and ownership, people feel the value of history, Identity, sense of place and sense of community. They express these feeling through mentioning that their whole life has been shaped around these buildings and their activities, and they are connected to these places through their memories, activities, buildings and boats, and families.

They expressed these feeling through their pictures and their explanations on those pictures. For example, Anna from Old Ferry Seafood took a picture of their fish house and states:

“This building is important to me, because I grew up here and I have so many memories here. I lived here with my husband when we married. I love it here.” [Pic. 3.12]

Travis Elliot expresses the sense of place and the significance of fishing tradition by taking a picture of the Capt. Pete fish house, where he worked all his life. He states:

“It is the place of fishermen to come. It has been all my life.

These buildings are a part of traditional waterfront.”

The in-depth interviews that were conducted after acquiring the photos in these communities highlight fishing heritage and material culture as a way manifestation of the significance of fishing traditions and fishermen’s ways of life to the public. Memory and history are also factors that according to fishermen are part of the significance of the fishing heritage. Sense of attachment and ownership are other factors that made several fishing heritage of value to their owners and they stated the interest in preserving those heritage elements, because they own them. [Fig. 3.10]



Pic. 3.12: Old Ferry Seafood in Holden Beach

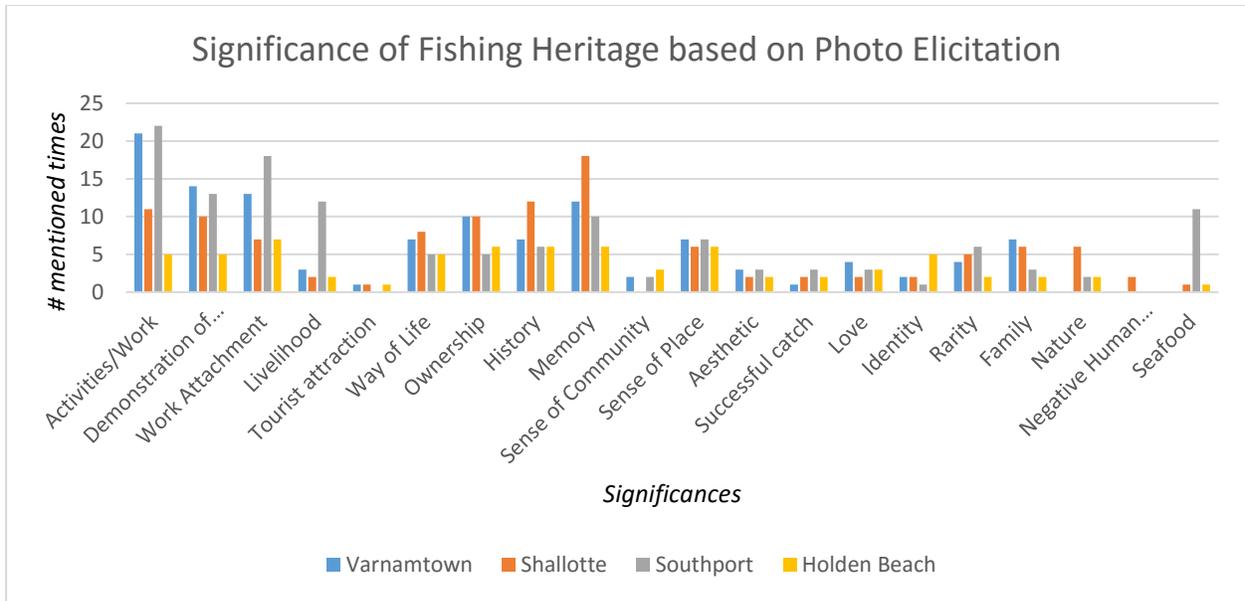
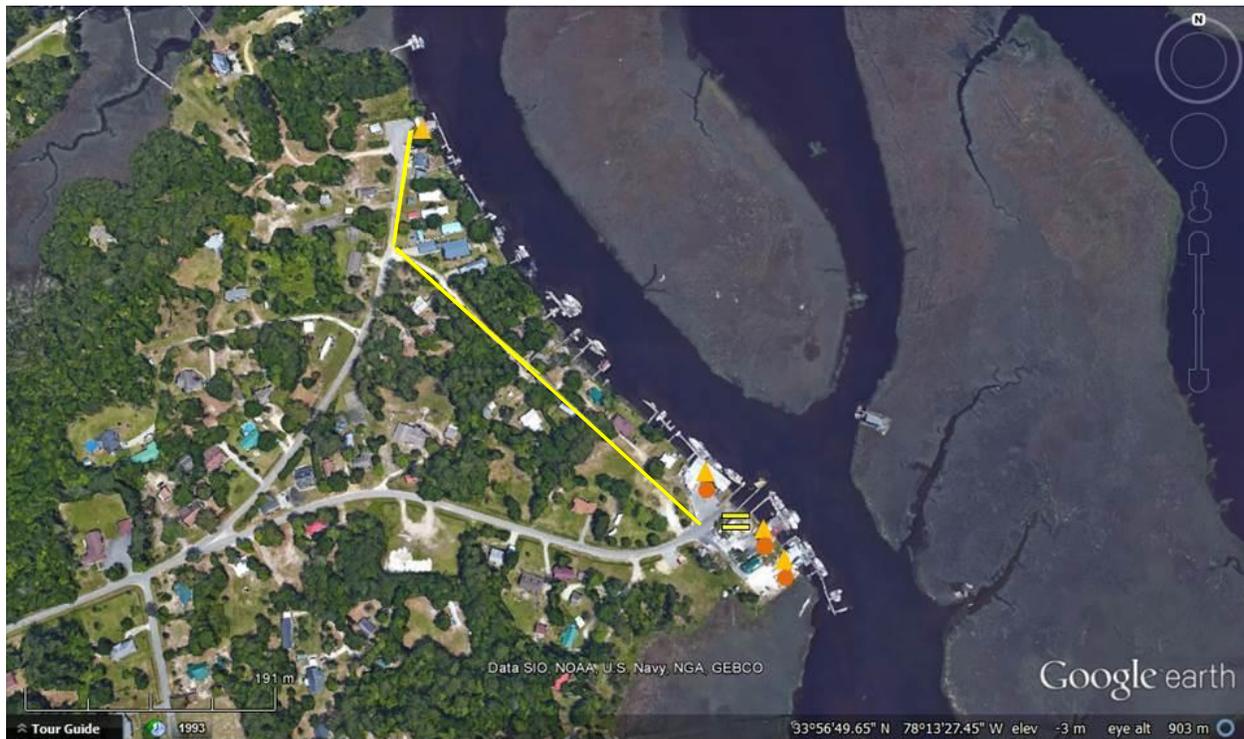


Fig. 3.10: In addition to the common significance of activity, work and ownership, people feel the value of history, memory, Identity, sense of place and sense of community.

3.8.3. Spatial Analysis: Boats moves, fish houses don't! The dependency of fishing sense of place to fish houses...

The results of interviews and photo elicitation from all these four communities show that the most significant building associated with fishing are the fish houses. Fish houses are the linkage between sea and land (Griffith, 1999). Although there is a mutual dependency between fishermen and fish house owners (North Carolina Rural Economic Development Center, 2013), the fish houses have a more dominant role in the shoreline as provider of ice, fuel, storage, packaging and general merchandise. They are the core point of business between the fishermen as provider of fish and buyers (either individual or whole sale.) Yet fish houses are different from each other. A spatial analysis, considering different factors about the fish houses in Brunswick County revealed some major differences among them.

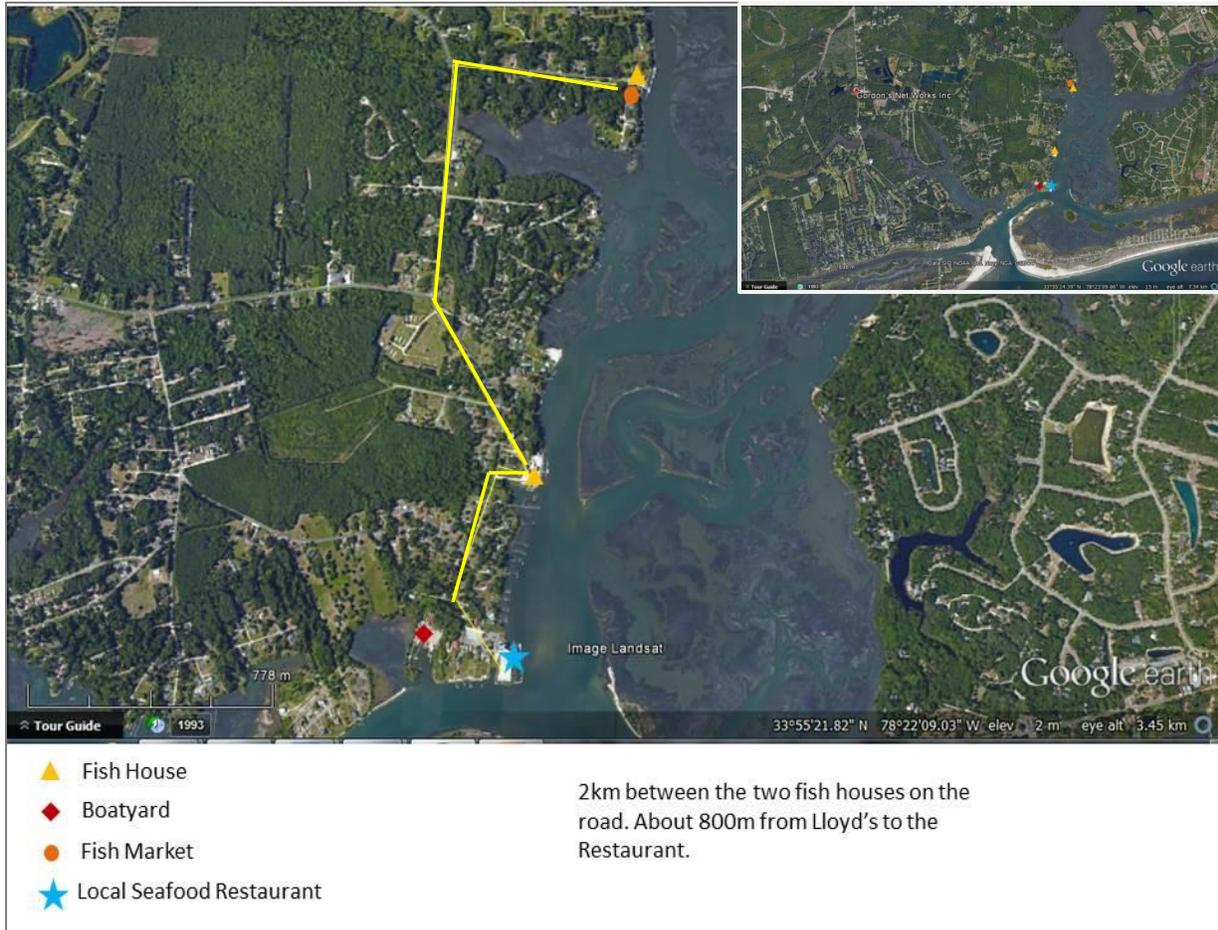
Img. 3.1: Varnamtown Commercial Fishing Area



- ▲ Fish House The one single fish house is abandoned. It was the old Ferry Seafood, which is now in Holden Beach. However, the building is still in place. The distance between this building and the others is about 500m.
- Boat Rail
- Fish Market Around these fish houses there are mostly local people's houses. According to the interviews most residence are in some way involved with fishing, e.g. providing fuel, mechanical work on the boats and engines, etc. The area is not yet heavily developed by newcomers.

Varnamtown has three fish houses still operating, with fish markets adjacent to them, in addition to a boat rail (the only boat rail in southeastern North Carolina). Furthermore, there is one fish house that has closed, but the building and its dock are still in place. The area around Varnamtown fishing community has not yet been gentrified with new development. Most residents are local people, engaged in fishing related businesses, if not fishing then other services, such as boat repair, providing fuel for fishing boats, packing seafood, and making nets and TEDs for shrimpers. The area is in closer to the inlet and to the ocean, and therefore, more and bigger fishing boats can reach these fish houses. These fish houses are very close to each other and have a good connection with each other [Img. 3.1]. Additionally, they enjoy a well-managed distribution of seafood, including imported and locally caught shrimp, not only through wholesale, but also through direct contact with individual customers. Fishermen and fish house owners have a common social-cultural memory from the past and value their fishing tradition.

Img. 3.2: Shallotte Commercial Fishing Area



Shallotte is the furthest south commercial fishing community in Brunswick County before Calabash. This area also is the closest of the four communities to the Gordon Net Shop. Although there are several other locations such as S&S Marine that sell nets and provide services for net repair, Gordon net Shop is the only shop in the area whose only activity is net making and repair. The two fish houses in Shallotte are very different in their way of operating and success. The northern one (Holden Seafood and its adjacent seafood market) is to some extent isolated. The area is dominated by new urban development. According to the fishermen, big boats cannot get there anymore, due to the fact that the channel is not being dredged and is not deep enough anymore, and therefore the business have gone down. However, two kilometers down along the same channel, the Lloyd's Oyster House is operating well [Img. 3.2]. The houses around this oyster house are mostly local residents and fewer outsiders live in the surrounded area. Still large untouched natural landscape exists close to this fish house. In addition, the fish house is

near a local seafood restaurant and a boat yard. In fact, the fish for the restaurant is partly provided by Lloyd's. The concentrations of the activities of the oyster house, boat yard and the restaurant, in addition to more local people living in this area and involved in fishing related activities, have provided a stronger sense of place and maritime landscape in this area than in the area around Holden's Seafood. Lloyd's Oyster House has a strong networking between the suppliers (fishermen) and the buyers. This strong contact between fishermen and the oyster house, and the distribution of the fish/oyster to the local restaurants, as well as its vicinity to other fishing related activities are the strong points of Lloyd's Oyster House. On the contrary, although Holden Seafood has a market as a point of connection with public, its location and lack of networking among fishermen, and difficulties of navigation of big boats in the river, along with growing urban development, have caused its isolation, and reduced its strong sense of place regarding the physical aspects of maritime cultural landscape.

Img. 3.3: Southport Waterfront and the location of the fish houses and fishing dock



The one operating fish house in Southport is located in the middle of (seafood) restaurants in the touristy part of the town and all around it is urban development. The port is a marina with recreational boats and recreational fishing [Img. 3.3]. Although it seems integrated in the town, the fish house is essentially a sanctuary for fishermen. This fish house has only wholesale seafood and conducts no trade with the public, including not providing seafood to neighboring restaurants. However, fishermen have a good network here; they gather here and exchange stories. They are open to outsiders coming to visit and share their stories. There is only one other fish house with a shrimp boat anchored in front of it. However, the building was closed during the one week of our research in Southport, and apparently is not operating on a regular basis.

Img. 3.4: Holden Beach commercial fishing area & the location of fish houses, fish market, and docks



Fish markets, fish houses and docks can be seen in several locations along the shoreline of Intercostal Waterway in the Holden Beach area which provides a sense of active commercial fishing. Several shrimp boats were observed during the field work. There are three fish houses in Holden Beach and located about a kilometer from each other along the northern shoreline of the Intracoastal Waterway. They have a strong connection with the public through the fish markets adjacent to them. The owners remember the past fondly. There are a couple of boat yards and docks close by and a famous fish market on the other side of the waterway. They have established a good connection to public through sharing historic pictures, selling shells from the fishing trips, and sharing stories. Fishermen have a good network and most of them are connected to each other. The area around these fish houses are mostly wetlands and marshes. Therefore, less urban development can be seen [Img. 3.4].

According to the spatial analysis above, some variables can be extracted to assess the state of fish house operation and the maritime landscape around them. These variable are summarized in table 3.2 in relation to each fish house/or groups of fish houses.

Based on the interviews that were conducted with members of fishing communities and empirical studies of the activities at fish houses, the table shows an interpretive evaluation of the state of each fish house as well as the total sum in each community. The extracted variables include social values such as being center of gathering; distribution point; fishers' connection; connection between fish houses and public; and among fishermen; and repositories of memories. An ordinal level of measurement was used in the interview questions to measure the level of existence of different variables in relation to each fish house. The values are non-existent (0), weak (1), moderate (2) and strong (3). In the interviews designed for this research, the members of fishing communities were asked to grade each of these variables for different fish houses in the area. The higher the grade is; the more values are associated with that particular fish houses. The last Column shows an overall value of each community according to their fish houses. Existence of other activities, such as boatyard, restaurants, and seafood markets, in the nearby area is an added value in shaping a more harmonious maritime landscape which also involves more people and community members in the activities related to fishing.

Table 3.2: Value and role of fish houses in each community based on different variables associated with them

Community	Fish houses	Center of gathering	Distribution point	Connection to public	Fishers contact	Repository of Memories	Multi-activities	Total grade & average for each FH	Total grade & average for each communities
Varnamtown	Garland Fish House, Varnamtown	3	3	3	3	3	3	18 (Av. 3)	18 (Av. 3)
	Beacon Seafood, Varnamtown	3	3	3	3	3	3	18 (Av. 3)	
	High Rider Varnamtown	3	3	3	3	3	3	18 (Av. 3)	
Shalotte	Holden Seafood, Shalotte	0	1	2	1	1	0	5 (Av. 0.83)	9 (Av. 1.495)
	Lloyd's Oyster House, Shalotte	1	3	2	2	3	2	13 (Av. 2.16)	
Southport	Tatum Fish House, Southport	2	2	0	3	2	0	9 (Av. 1.5)	9 (Av. 1.5)
Holden Beach	Old Ferry Seafood, Holden Beach	2	3	3	3	3	3	17 (Av. 2.83)	12.3 (Av. 2.19)
	Finz-N-Tailz, Holden Beach	1	3	2	2	2	3	13 (Av. 2.16)	
	Sons of the Sea Seafood	0	2	2	0	0	3	7 (Av. 1.6)	

Values:
0= Non-existent, 1=Weak, 2=Moderate, 3=Strong

3.9. Discussion and conclusion

This paper created an inventory of the existing traditional fishing communities in Brunswick County and assessed the level of significance of fishing material culture including buildings, sites and boats in shaping sense place among fishermen and demonstrating the character of fishing. Also the results highlighted the specific sites and items that carry the most significance for fishing communities. Continues use of these traditional buildings, sites and items, which are the remains of a fading long traditional activity in this area, and is a part of a changing era, can be used for livelihood promotion through branding

their communities as cultural communities in order to promote heritage tourism, education purposes and awareness rising.

Fishing material culture, including fish houses, boats, docks, etc., are significant for fishermen and their communities in sense that they represent their authentic activities, and they feel these items and places are repositories of history and memory, representing their individual and community's identity and sense of place. These buildings and sites are landmarks that form their traditional environment. Although, some might not carry historical values, since they help representing their traditional activities, they believe these buildings and sites should be preserved as part of their heritage, for present and for future generations [Fig. 3.11]. The result highlights the non-market values of fishing cultural heritage as a component of ecosystem services¹¹, where cultural heritage is generally a forgotten and unappreciated aspect of ecosystem services (Milcu et al, 2013; Camarsa et al, 2012; Ash, 2010).

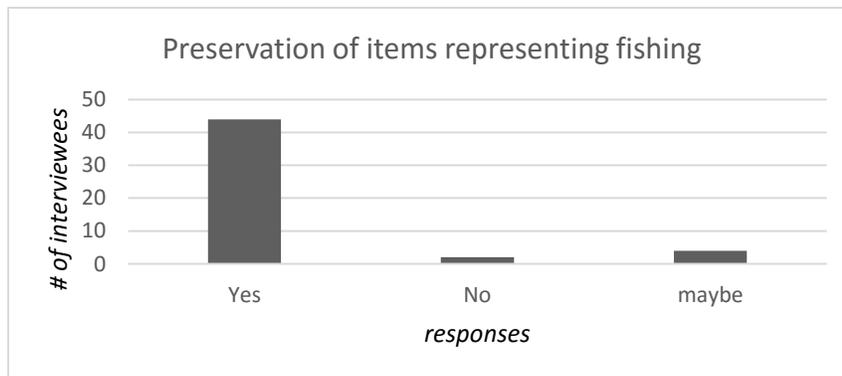


Fig. 3.11: Majority of interviewees, in general, believe that fishing heritage or at least some aspect of it should be preserved in Brunswick County.

Therefore, there is a need to include not only economic valuation, but also more qualitative evaluation and discourses that reveal how place attachments plays a significant role in individuals and communities' identities. This directly can improve our understanding of benefit and wellbeing which is an important aspect towards management of coastlines. New approaches, considering different types of resources,

¹¹ Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth. Cultural services are the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences.

including cultural heritage, have the potential to help decision makers design policies or management strategies that can help achieve socially, ecologically, and economically equitable and sustainable outcomes.

Some members of the fishing communities are open to new ideas, if it helps them preserve their original fishing activities. Through this study, the hypothetical option of promoting cultural tourism was introduced to the fishermen. Cultural tourism constitutes tourism highlighting traditional activities without disturbing their authenticity. A majority of fishermen and fish house owners showed interest, at least to explore the possibilities and options. Although, some are pessimistic and feel that tourists might disturb their work, or visitors might not even be interested in what the fishermen do, there are number of people in each community who are interested in pursuing the idea.

Following the field work and the rapid assessment of buildings and sites, this paper concludes that many of these items hold cultural and historical values. They demonstrate a tradition that forms part of the people's culture. Under the Historic Preservation Criteria, since community members believe some of these properties deserve recognition and protection, they can be designated as Local District or Local Landmark. All the elements of fishing heritage are parts of a maritime cultural landscape and the cultural significance of these properties only can be highlighted through the ensemble value of all these sites. Therefore, the present paper suggests considering a serial cultural nomination and registration for the properties which contribute to shape the fishing character and sense of place. Serial nomination and registration means that places and items that have been considered culturally, traditionally and historically important for the local community will be proposed for registration all together, even though they are in different areas. This is a practice that was promoted by UNESCO for listing World heritage sites (Guidelines for the Preparation of Serial Nominations to the World Heritage List, 2016)¹². However, in smaller scales this can be a good strategy for highlighting the values of certain heritage locally, regionally and/or nationally. The fishing areas in Varnamtown and Holden Beach can be considered the core and a start point for formulating Fishing Cultural Landscape as Local Landmark. The fact that adding these

¹² Guidelines for the Preparation of Serial Nominations to the World Heritage List. (2016). Whc.unesco.org. Retrieved 15 April 2016, from <http://whc.unesco.org/archive/serial-noms.htm>

areas to the Historic Preservation lists gives more attention to the values of these sites helps not only to promote knowledge and understanding about traditional and commercial fishing, but also to develop policies to preserve these areas as operational working waterfront, and to protect and promote associated fishing communities' tradition and livelihood.

In order to preserve the fishing communities in a way that they feel their authentic way of life has not been threatened, and help them to preserve their identity and sense of place as a part of their sociocultural wellbeing, this paper concludes that fishing cultural tourism might be one option to be explored in coastal management plans for promoting local economy and wellbeing of the communities.

The next paper will examine this concept from the point of view of tourist and potential visitors.

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Appendices

Appendix 3.1: Fishing communities' members interview

Interviewer:

Interviewee:

Date:

Introduction:

I am conducting a research at ECU. The purpose of my research is to understand more about the material culture associated with fishing, such as boats, fish houses, etc. I would like to know what aspects of material culture are more important for you. If there are buildings, sites, objects that are of cultural values for fishermen. The questions are designed to understand this topic. Would you like to participate?

If the answer is "yes", we continue with the questions:

Questions for Fishermen

PART 1: Fishing activity

1. Age, Education, Gender
2. What type of fishing activity are you engaged in?
3. How long have you been a fisherman? (Age?)
4. Have you always been a fisherman?
5. Do you do other work (if so, what sort)? How much time do you spend on other work?
6. What vessel do you use? Size, etc.
7. How many crew do you have? Family/friends?
8. Are your wife and children involved in the fishing business? If so, how?

9. How would you describe the fishing activity that you do?
10. Have you changed your fishing activity? If so, why?
11. Where do you sell your catch? I.e. Market, supermarket, direct selling, local businesses
12. Have you noticed any changes in fish stocks?

PART 2: Identity and sense of place

13. Why do you fish?
14. How important is fishing to you?
15. Why is it important to you?
16. Do you live in the local area? If not, why not?
17. Would you say there is a fishing community in the area?
18. Is the fishing community involved in the wider community? I.e. Involved in clubs, associations, societies, festivals, music, etc.?
19. How is fishing viewed in the local area?
20. Do you feel that people (e.g. People who don't fish) understand what commercial fishing is all about?
21. Where do fishermen gather socially?
22. What networks exist for fishermen?
23. Does commercial fishing contribute to the character of this area?
24. Is it possible to describe the qualities of that character? (Prompt: fishing gear, local produce, fishing boats etc.)

25. How would the area change if fishing was to stop completely?
26. Which buildings/sites do you think are representing commercial fishing?
27. Do you think these buildings/sites should be preserved, even if not for fishing for reuse of another function? (E.g. tourism, etc.)
28. Is there any particular place of memory for fishermen?

PART 3: The future of fishing

29. Would you consider other work if it were more profitable? Or if you could no longer fish? What sort of work?
30. Do you feel you get any benefit from tourism?
31. How do you feel about becoming involved in tourism-related activities?
32. How do you feel about the future of fishing in the area (positive, negative, indifferent)? Impacts of regulation, planning (MCZs, MPAs), policy etc.
33. Would you encourage your son/young people to enter the fishing industry? Why or why not?
34. Do you think the new generation and young people want to become fisherman?

Picture

35. If you are asked to take two pictures of places or buildings related to fishing that are important to you, what would you take picture of? Why?

Thank you for your time. This interview will be used for research purposes.

- Can I indicate your name in my research?
- Can I contact you again for follow up?
- If so, your contact details?
- Any more comments?

Appendix 3.2: Photo Elicitation

Each interviewee was asked for two pictures that show the places or any items related to traditional fishing that are important and valuable to them. They were asked to explain why these two places/items are important to them. The results are as follows:

Varnamtown

<p>1. Shane</p>	<p>Fish hanging: Because people take picture with it. It shows that here everything is about fishing. It is a sign.</p>	
	<p>My boat. I have a lot of memories with it. I had it for one year. It is my work vessel.</p>	
<p>2. Matthew</p>	<p>Dock. All dock with boats and restaurants. They are all important to work here. It shows the visitors what we do. It shows the boats that I work on them.</p>	
	<p>Boat. Because I work on it. The boat with my boss. Because I am happy with my work.</p>	
<p>3. Jackie</p>	<p>Our fish house. It is money, it is work. Tourists come, commercial fishermen come, and everybody comes here. It is our business and life.</p>	

	<p>Boat. The boats that come from the sea. That's my income. When it comes in, in the end of the day, they bring the shrimp. It shows if there is no fishermen, no seafood.</p>	
<p>4. Alex (Beacon)</p>	<p>Boat. The wooden boat that come in full of shrimp. That shows the whole industry. They are reminder of the old fishing and shrimping that fading away, showing the work and tradition.</p>	
	<p>The seafood market here (Fish house). Because I work here. Any of them is history. All of them are the same to me. All we have the same occupation. It shows hard work and a lot of fun, talking while working, telling a lot of lies. Hahaha.</p>	
<p>5. Ronald Galloway (Beacon)</p>	<p>All the boats tied up here. They are interesting, to show people where we work, what we do. In future they will see where we were one day. Keep it for keep sake. Everything has been changed and all will be changed in 50 years. It will remind to what it was before.</p>	
	<p>Aerial photo of all the area around here. You could see the general area, you could look what is happening, and you could see everything.</p>	<p>(Imaginary photo)</p>
<p>6. Jesse Butterbaugh</p>	<p>Here, the whole thing here. It is beautiful. Shows the work and active people.</p>	
	<p>The beach, with shrimp boats off the beach. It is beautiful. It is just when boats come from the see through the river, it is amazing. Shows the activity here.</p>	

<p>7. Mr. Garland</p>	<p>Picnic tables at our fish house. Everybody gathers here. We have a lot of memory here.</p>	
	<p>My wife and I at our fish house. We work here all our life together. It is full of memory.</p>	
<p>8. Donald Bollinger (Beacon)</p>	<p>The boats. Docked at the dock from the river. It is nice to come back after a good catch.</p>	
	<p>The dock and the shrimp boats. Shows our work. Our work place, our life.</p>	
<p>9. Elwood Cheers (Beacon)</p>	<p>Beacon fish house. I work here. I love it here.</p>	
	<p>My boat. I work on it. It provides for me. I spend a lot of time on it.</p>	
<p>10. Denny Galloway (Beacon)</p>	<p>Docks, buildings and boats. Shows the whole area. Everything.</p>	

	People on the docks with buckets heading in and of boats. (Work)	
11. Jay Robinson (Beacon)	My building (fish house). It is the only thing that has not been changed in my life. I spend 90% of my time. I am very satisfied with my life and career.	
	My house. It is where I was born and my father bought it from the fishing money. It is very close to here.	(He did not send any picture of his house.)

Varnamtown and Shallotte

1. Mark Galloway	My boat (High Rider). That's it for me. Without it I am nothing. I drive it. I had it for a long time. Since I was very young. I love it. I spend more time on it than at home. It brings luck to me.	
	My boat and my family and I. Brothers, dad, wife, everybody is in this business, with the boat. The fish house is something new for us. We have it only for a few years. It shows our family life and work.	
2. Jack Carmike.	Boat. Because it is one of the last boats working in this area. There used to be 100 and now less than 20.	
	The railway. Where the boat pulls out. It is the only one from Florida to Wancheese. Used to be 15 but now only this one.	

3. Lori Galloway	The fish house here at Beacon. Because we work in it and I am with my family here. We are independent.	(Picture added later)
	Our boat. Because I go out fishing with my husband. I have a lot of good memories. And it is one of the oldest shrimpers still working.	(Picture added later)
4. Bill Greer	My old fish house. I have a picture of that. That shows that I could have become rich.	(No picture was provided)
	Nothing left. My boat. It is the most beautiful snapper in the whole coast. It is clean and taken care of.	
5. Jason Holden	Older places are important. We are the only one left here. And one oyster house in around a mile on the river. From the river, where the boats come. It is one of the last ones around here.	
	Lloyd oyster house. It is a family business for a long time and still going on. It has been here for a long time.	
6. Mr. Lloyd	Activities in the oyster house. When everybody comes back and work back here in the building. The process. Oyster process. It is exciting. You use your hands, no machine. (Work)	
	I would take a picture of my shrimp boat. When you see it you never know what is going on in that boat when it goes on water. I like for my children to see. I want them to see the operation; the way nets go in, the way the net come out with shrimp. Not many people go on the fishing boats.	
7. Tonya Lee	My daddy's on the dock. He is the main person. We have good memories with the dock. And daddy is the one who keeps everything works here.	

	<p>Our oyster processing building. This is what my daddy built. It is his legacy. I love it and I attached to it because of my daddy and it is our family life.</p>	
<p>8. Taylor Galloway</p>	<p>Fish house. Our fish house here. Just represents how fresh seafood comes to you, and what the work is about.</p>	
	<p>A boat, a fishing boat. The same as the fish house...</p>	
<p>9. Corey Galloway</p>	<p>All this here. My father fish house, that fish house. To show everything, the activity.</p>	
	<p>And the boat in front of the house. My father boat. It is always there in front of the house. It is pretty cool.</p>	
<p>10. James Firth</p>	<p>Recording stopped!!</p>	
	<p>Recording stopped!!</p>	
<p>11. Brandon Gordon</p>	<p>Landing at the end of this road. I used to go fishing with my grandfather. But it is not there anymore, there are some fishing going on there. It is a place that reminds me of my fun time in childhood.</p>	
	<p>Larry Holden's Seafood. We get our seafood from them. It is the last one standing there.</p>	

Shallotte

<p>1. Samantha</p>	<p>Sandbars in the river. It is bad. It affects the fishing. It was not there. This picture shows how bad it is for fishing. <u>(Nature)</u></p>	
	<p>Inlet. Because it is not clean anymore. The inlet encourages fish boats to come it, like Calabash. <u>(Nature)</u></p>	
	<p>Larry Holden's seafood. Because it is old, and all fish coming in there.</p>	
<p>2. William Trips</p>	<p>Old trawlers that I have. Because it is something of the past.</p>	
	<p>The same. (He has two trawlers and wants the pictures from them.)</p>	
<p>3. Mike Potts</p>	<p>The creek here. It closed off. I used to go there and have picnics with my wife and friends. There were no houses there. I have memory taking my wife there. <u>(Nature)</u></p>	
	<p>The Trips boat place (B. J's). I spent a lot of time there. Lots of memories. That place is a part of the past.</p>	

<p>4. Gordon Winfree</p> <p>(I probed him for the net shop)</p>	<p>Larry Holden's seafood. It reminds me of old ways of fishing. He has shrimp boats.</p>	
	<p>Old point. Inlet View restaurant. It is something of the heritage. The place has a lot of memory.</p>	
	<p>Net shop. Because I built the business myself. The picture of pulling gillnet, because many people (fishermen) do it daily. We used to sell a lot of gillnet but we cannot sell as much since the demand lowered.</p>	
<p>5. Mitchel Smith (Father)</p>	<p>Larry Holden's Seafood. Because it has been there so long and that's one of the only thing left.</p>	
	<p>Lloyd's. Because it has been there so long and that's one of the only thing left.</p>	
<p>6. Stanton Smith (Son)</p>	<p>Gordon's net shop. Because of what they do. They hang nets and it gives the feeling of fishing and water.</p>	
	<p>Fishing piers at Ocean Isle. It is all about fishing.</p>	
<p>7. Robert Smith (Known as Holly)</p>	<p>River here with boats on it. Because of fish and boats. It shows fishing.</p>	
	<p>Breakers at the beach. They show changes in nature and human intervention. <u>(Nature)</u></p>	<p>(No pic available)</p>

8. Timmy Millikan	River in low water. To show how bad it got. It affected fishing and oystering badly. They dredge inlet in Varnamtown, but they don't do it in Shallotte. <u>(Nature)</u>	
	Lloyd's oyster processing. It is 60 years old business. I was brought up there.	
9. Doug	Creek by the inlet it was at Gurganus Rd.	
????????????	Granddad's oyster house. Still I have the key, although the house is not there anymore. I kept oyster in it and sold them.	
Visit: by market in Shallotte (????????????) (No contact detail provided)	Menhaden plants in Southport. It was a booming business. (it is not there anymore, historical image maybe)	

Southport

1. Donald Lowe Tatum Fish House 910 617 3477 31 Aug. 2015	Boat: Because it is mine and I fish with it	
	Catch: because it is what our livelihood depends on.	

<p>2. Allen Tatum</p>	<p>My boats and catch: These bring my food, livelihood</p>	
	<p>Fish house here: I worked hard for them</p>	
<p>3. Chris (?) Tatum Fish House 910 617 3477 31 Aug. 2015</p>	<p>Fish: There are so many different species. They are beautiful. I like when we catch them or somebody else catches them and the smile that come on their faces.</p>	
	<p>Boat, any boat that I go fishing with. It is a vessel to catch fish with.</p>	
<p>4. John Hagg Hagg & Sons Seafood Oak Island</p>	<p>American Fish Company. It is the oldest fish house in Southport and is a part of the history. It was in a movie too.</p>	
	<p>Fishy Fishy and Potter fish house, in general the waterfront. It shows part of the history.</p>	

<p>5. Charles Lane (Tater) chasentailkinnels@yahoo.com</p>	<p>Fish house: Because I sell my catch here.</p>	
	<p>Potter's fish house because it was one of the oldest one.</p>	
<p>6. Alex Tatum 910 712 1420</p>	<p>Boats they are the source of income and family livelihood.</p>	
	<p>Fish house here. It is our landmark in Southport as the last working fish house.</p>	
<p>7. John Porter 910 712 0985</p>	<p>Fish house here (Tatum). Because I sell here, and it is the only one left here.</p>	
	<p>Boats. All boats. Shows the memories of other fishermen as well.</p>	

<p>8. Ricky Bishop 910 612 1677</p>	<p>My boat. Because I go fishing with it. (the small boat)</p>	
<p>9. Tim Walters 941 243 9196</p>	<p>Boat: because it is what you need to go fishing with.</p>	
	<p>Rods and reels, because it is what you need to catch fish.</p>	
<p>10. Tara 910 520 6995</p>	<p>Our boat: it is full of memories.</p>	
	<p>Packing and reloading fish: enjoy watching it. They will be gone in 10 years or so. This way of life will be gone. I was raised next to the elders and now my boyfriend is doing it.</p>	
<p>11. Albert Doshier 901 713 3154</p>	<p>My catch; big fish. It is a pride issue.</p>	
	<p>Fish house here: I see money in it. It is where I sell my catch.</p>	

<p>12. Charles 910 269 1802</p>	<p>My boat: It is mine. It has been mine for 6 years. Its name is Miss Judy</p>	
	<p>This fish house: It is the only one left in this area.</p>	
<p>13. Trey</p>	<p>Tatum fish house: I fish here. I was selling here. It is memorable.</p>	
	<p>The dock here at Southport: It reminds me of my youth and memories of then. And the time that it was a fishing town.</p>	
<p>14. Kenneth Fex 910 620 5847</p>	<p>Light house from here. Because I see it at horizon when I come in.</p>	
	<p>Fish house here. I cannot get rid of my fish without it. And it has ice which is a big issue for fishing.</p>	

Holden Beach

<p>1. James Patrick Finz and Tailz Holden Beach 910 712 4336</p>	<p>Boat because it helps me catch and it's my paycheck.</p>	
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	<p>Fish, and no place...fish my livelihood.</p>	
<p>2. Ronald Buff Finz & Tailz FH 910 742 7201</p>	<p>Old American Fish Company because it is the oldest fish house in Southport and reminds us of the time that the town was all about fishing.</p>	
	<p>Frying Pan Tower. Because you could see it from far when you come with your boat in. It marks the end of Frying Pan Shoal. (Nothing specifically in Holden Beach. We are new here.)</p>	
<p>3. Betty Buff Ronald's wife.</p>	<p>Finz & Tailz fish house. It is now where I work and spend a lot of time</p>	
	<p>Fishermen with fish. It shows what we are. This best describes us.</p>	
<p>4. Anna Old Ferry seafood Holden Beach (Phil's wife)</p>	<p>Dock with boats here. Everybody takes picture of it. It shows our work. From the other side of the river.</p>	
	<p>Fish house. Because I grew up here and I have so many memories here. I lived here with my husband when we married. I love it here.</p>	

<p>5. Philip Robertson Old Ferry owner 910 617 0137</p>	<p>On the water around Varnamtown. It shows a strong fishing community that still exists.</p>	
	<p>A shrimper. Maybe the one here. These boats are disappearing. I am selling this one.</p>	
<p>6. Robert Campbell Sons of the Sea. Black Dog Sea Food</p>	<p>My boat. It is the love of my life besides my family.</p>	<p>(His boat was not around)</p>
	<p>The ocean. Big blue sea, love to be there on my boat. It's my passion.</p>	
<p>7. Travis Elliot Capt. Pete Sea Food. 910 616 8508</p>	<p>Capt. Pete fish house. It is the place of fishermen to come. It has been all my life. These buildings are a part of traditional waterfront.</p>	
	<p>Shrimp boats, they are heritage.</p>	

Appendix 3.3: IRB Approval—Fishing Heritage Survey



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** · www.ecu.edu/irb

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: [Sorna Khakzad](#)
CC: [Lynn Harris](#)
Date: 2/25/2015
Re: [UMCIRB 14-001500](#)
Valorization of Coastal Cultural Heritage

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 2/25/2015 to 2/24/2016. The research study is eligible for review under expedited category # 6, 7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
Consent letter	Consent Forms
CRM-Proposal-Sorna-08-Aug-2014.docx	Study Protocol or Grant Application
Interview questions.docx	Surveys and Questionnaires
Interview_questions.docx	Interview/Focus Group Scripts/Questions

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

Chapter 4: Coastal cultural tourism promotion for supporting cultural communities

Abstract: Considering the growing attention to the coastal areas and the negative impact that urban and industrial developments have on traditional coastal communities, this research attempts to identify and highlight the value of coastal cultural heritage, in particular of commercial fishing heritage, for promotion of cultural tourism in the coastal areas. This study will investigate whether commercial fishing heritage can promote an authentic cultural tourism which benefits the local fishing communities. Since the fishing communities in southeastern North Carolina are in decline, and their traditional environment is fading away, this research attempts to highlight the important role of fishing cultural heritage in promoting cultural tourism directed at these communities. The fishing heritage and cultural places in the four fishing towns of Varnamtown, Carolina Beach, Shallotte and Southport have been recorded and their cultural values for fishing communities have been assessed. The present study determines the level of interest and reverence that tourists have towards these items and locations.

4.1. Introduction

Tourists are increasingly demanding more unique and authentic products such as heritage/cultural tourism (*Buhalis, 2000; Tsiotsou & Goldsmith, 2012; Agarwal 2002; Sedmak and Mihalic 2008*). Access to traditional coastal features including an active fishing industry (i.e., fishermen, vessels, and processing facilities), commercial wharfs, local crafts made from coastal resources, fresh-caught seafood, and seafood cuisine can create a unique and authentic experience in coastal regions and contribute to a vibrant culture (Lacher, et al, 2013). This can provide a unique experience for tourists, as well as a renewal of traditional activities which help to sustain cultural communities and their occupations.

Competition from the tourism industry, coastal gentrification, development and subsequent impacts on marine ecosystems have resulted in decline in traditional usage of the coast and its traditional industries such as fisheries and transportation (Barkley, Henry, and Gantt 2004; Smythe 2010). Therefore, the remnants of these traditional activities, which comprise part of human cultural heritage, is fading from our coasts. Given the concerns about efficiency of economic and social strategies in traditional communities,

policy-makers need to know the potential of cultural heritage for place-marketing, developing of cultural tourism, and providing cohesion and sustainability in the communities (Dümcke & Gnedovsky, 2013).

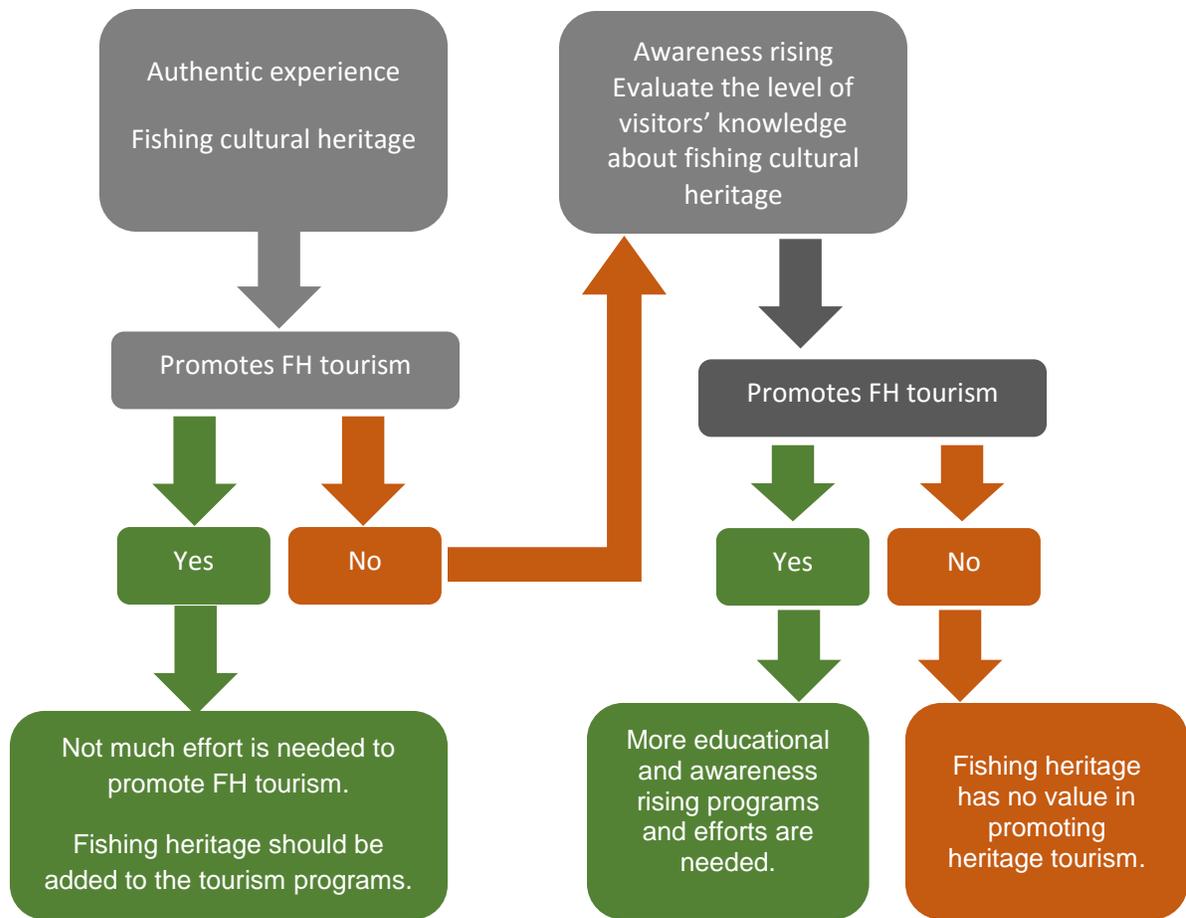
This study highlights the value of material cultural from fishing industries for tourism development, which means developing a cultural tourism directed at traditional communities and their coastal cultural heritage. Cultural tourism directed at fishing communities can offer a unique and at the same time informative experience about a tradition that is in its changing era, as well as a motivation for renovation in traditional activities which help to sustain the cultural communities and promote their occupations (Urquhart and Acott, 2012).

Although, there is a growing demand from tourists for a unique experience, little information exists on the consumer's demand for cultural or heritage elements in coastal destinations (Lacher et al, 2013). Cultural heritage has been used in many instances in coastal management plans to develop not only tourism, but also to improve the local communities through developing economics, urban planning and heritage preservation (Khakzad, 2015a, b; Pinder, and Vallega, 2003; Callegari, 2002; Scheyvens, 1999). There have been several studies in different parts of the world which demonstrated these qualities. For example, government-subsidized employment system (as it is called social employment in Belgium) at traditional boat yards in Belgium has been a way not only to secure jobs for people, but also to guarantee the preservation of a traditional occupation and craft (Khakzad, 2015a). However, many coastal communities have overlooked their cultural heritage as a mean of providing added income by fostering the general public's and tourist's interest in heritage conservation and desire for authentic and unique cultural experiences. Despite its latent values, coastal cultural heritage is not traditionally thought to be a major asset in most coastal destinations (Gale, 2005).

Several projects in the USA and around the world have proved that fishing cultural heritage can promote heritage tourism. Fishing culture is an important part of the coastal tourism experience and many coastal areas (e.g. in England, France and Belgium) draw on the presence of an active fishing industry for their economic success (Daniel et al, 2008). However, despite the presence of cultural communities and wealth of cultural assets, cultural tourism has not been emphasized adequately for tourism promotion in southeastern North Carolina. Although many towns and areas in this region attract high numbers of

tourists, frequently these areas suffer from the negative impacts of tourism. Construction of shoreline hotels and tourist facilities that changes land use often cuts off access for the locals to traditional fishing grounds and in the long term causes a decline in traditional activities and weakens cultural communities. Therefore, the aim should be to develop a tourism industry that supports cultural communities, in order to achieve a twofold goal: cultural tourism promotion and sustaining cultural communities. In several parts of the world, re-establishment of the traditional activities and recuperation of historical landscape have been considered as a remedy for restoration of the maritime landscape and recovering of the traditional fishing industry (e.g. horseback shrimping in Belgium which is continued as a traditional occupation in Belgium, as well as an organized tourist attraction ("Shrimp fishing on horseback in Oostduinkerke - intangible heritage - Culture Sector - UNESCO", 2016)) (Carbonell, 2012).

The overall goal of this study is to understand the significance of fishing cultural heritage for tourism development as an authentic experience in southeastern NC. The study of coastal cultural heritage provides an insight to the symbolic and socio-cultural significance of fishing-related tangible and intangible heritage (Claesson, 2005) that can be used for cultural tourism development. This paper attempts to identify the types of cultural heritage valuable for tourism promotion, and to assess if cultural tourism, directed at fishing communities and their maritime heritage, is appealing for tourist attraction. This research hypothesizes that while tourists are interested in fishing cultural heritage, the tourism industry has overlooked the value of this heritage for tourism development in Brunswick County. In brief, this research explores whether authentic fishing cultural heritage tourism can be a visitors' destination choice in Brunswick County, and if providing more information on fishing cultural heritage attractions can promote this tourism. Flowchart 4.1 summarizes the research process.



Flowchart 4.1: This flowchart summarizes the research process. After having identified several authentic fishing communities in Brunswick County, the question is that weather these sites are significant to promote fishing cultural tourism. Through interviews with potential tourists to the area, if the response is “Yes”, clearly putting more effort in promoting fishing cultural heritage is necessary through tourism and visitor centers. However, if the response is “No”, the present research hypothesizes that more awareness raising and education can promote this type of tourism. If “Yes”, then more educational programs should be added in this respect. If “No”, the research concludes that fishing heritage has no value for promoting this type of heritage tourism.

4.2. Literature review

4.2.1. Cultural tourism

The most well-known experiences to use cultural heritage for economic development has been tourism and reuse of heritage sites and buildings (Orbasli, 2000; Cleere, 1989). This is due to the fact that an acceptable approach to justify cultural heritage protective policies has been the importance of use-value and the state of the heritage (Throsby, 2010; 2000; 1999; Littrell, 1997). “*While attitudinal factors are undoubtedly of great importance, sustainability is inextricably linked with the nature of the physical heritage legacy. A key point here is the potential of this legacy for conversion to profitable alternative*

uses. *If this potential is weak [...] then a presumption in favor of extensive and costly preservation is difficult to justify.*" (Pinder, 2003). Tourism has been discussed to a great extent in respect to cultural heritage (Hargrove, 2014; Ruoss & Alfarè, 2013) and the term cultural tourism has been applied for tourism that is directed at cultural heritage.

Cultural tourism is branch of tourism focusing on a country's or region's culture, and the lifestyle of the people in those geographical areas including, but not limited to, the history of those people, their art, architecture, religion(s), and other elements that helped shape their way of life (Richards, 2005; 2009; Stebbins, 1996; Swarbrooke, 1994). Cultural tourism has been defined in several ways (Richards, 1996; 2003). Cultural heritage tourism has been defined from a supply side (Palmer 1999; Yale 1991) and demand side (Dahles 1998; Poria et al, 2001; 2003; Richards, 1996; Silberberg, 1995). Supply-side definitions focus on historically and culturally significant attributes of the site itself. Demand-side definitions focus on the motivations and experiences of the tourists.

Cultural tourism became an object of study in the beginning of the 20th century, but only in 2002 was a formal definition of cultural tourism published by the International Council for cultural and historical monuments: *"The cultural and cultural-cognitive tourism actually is this form of tourism, which focuses on the cultural environment, which in turn may include cultural and historical sights of a destination or cultural-historical heritage, values and lifestyle of the local population, arts, crafts, traditions and customs of the local population..."* (International Council on Monuments and Sites) The World Tourism Organization (Report WTO, 2012) defines cultural tourism as *"trips, whose main or concomitant goal is visiting the sites and events, whose cultural and historical values have turned them being a part of the cultural heritage of a community."* Cultural tourism has been defined as *"the movement of persons to cultural attractions away from their normal place of residence, with the intention to gather new information and experiences to satisfy their cultural needs (Richards, 1996)."* Cultural tourism can focus not only on the cultural products of the past, but also on contemporary culture or the 'way of life' of a people or region (Silberberg, 1995; Richards, 1996). One sub-section of cultural tourism is ethnic tourism which is a tourism that its primary attraction is the exotic existing local population and their associated artifacts and material

culture such as crafts, architecture, food etc. (Smith, 1977; Van den Berghe and Keyes, 1984; MacCannell, 1976). The focus of ethnic tourism is an existing community with an ongoing lifestyle.

Ethnic tourism is considered an attraction on the authentic life style and tradition of certain community (Yang, 2007; Wood, 1998). Therefore, cultural tourism can be an instrument for economic development and growth through attracting visitors outside a community-host who are interested in the historical, artistic, scientific or traditional and lifestyle related attractions of that specific community, region or group (WTO, 1983; WTTC, 2006; Wall, 1997). This type of tourism, if community-driven, can benefit local and traditional communities (McKercher and Du Cros, 2002; Littrell, 1997), and improve the economy.

4.2.2. Authenticity: an original experience

Authenticity has been the topic of research in cultural heritage preservation as well as in tourism. The debates on authenticity in cultural heritage preservation started in the 19th century and continued until recent years (Jokilehto, 1985; Brandi, 1996; Morris, 1996; Jokilehto, 1999; Brandi, 2005; Stovel, 2008; Jerome, 2008). But not until the Nara Document on Authenticity, did a unanimous definition of cultural heritage authenticity exist:

“Conservation of cultural heritage in all its forms and historical periods is rooted in the values attributed to the heritage. Our ability to understand these values depends, in part, on the degree to which information sources about these values may be understood as credible or truthful. Knowledge and understanding of these sources of information, in relation to original and subsequent characteristics of the cultural heritage, and their meaning, is a requisite basis for assessing all aspects of authenticity.” (1994 Nara Document, par. 9)

Considering that cultural heritage encompasses both tangible and intangible aspects which strongly link with each other (Ito, 2003; Lenzerini, 2011), authenticity can be seen in a physical structure and/or in a traditional practice (Jokilehto, 2006). According to The *Oxford English Dictionary* ‘tradition’ is *“The action of transmitting or ‘handing down’, or fact of being handed down, from one to another, or from generation to generation; transmission of statements, beliefs, rules, customs, or the like, esp. by word of mouth or by practice without writing.”* Likewise, culture means *“the whole way of life, material, intellectual, emotional*

and spiritual, of a given people" (Frances Berenson, in Brown, 1984: 43). Thus, cultural heritage encompasses all different aspects of culture, traditionally handed down from generation to generation, and involves both continuity and change (Coetzee & van der Waal, 1988). Authenticity of a place includes design, material, workmanship and setting (the World Heritage Operational Guidelines), traditions, techniques, language and other forms of intangible heritage, as well as spirit and feeling or other issues (the World Heritage Operational Guidelines, Revised Ver. 2005, par. 82; Lowenthal, 2008).

Values and significances of certain cultural heritage are built upon common values in societies, which results in formation of cultural identity for a community (Ferret, 1996; Martinez, 2008). Traditional societies in traditional settlements within cultural landscapes carry their own cultural identity (Rossler, 2008). This cultural identity shapes an important part of cultural heritage and is understood as traditional sociocultural authenticity (UNEP and UNWTO, 2005). Traditional sociocultural authenticity justifies the continuation of traditional forms of life and traditional treatment of the built structures (Jokilehto, 2006; Martinez, 2008). Therefore, any society that has traditional activities that have gone on for a considerable time, which has resulted in producing specific cultural settings including landscape, building and material culture, in addition to socio-cultural values that resulted in formation of a specific sense of identity and place, can be considered of authentic value.

Following the notion of authenticity in cultural heritage preservation, a topic, which is linked to cultural heritage, concerns tourists and their choice of destination.

4.2.3. Tourist's destination choice and theory of planned behavior

Studies show that visiting culturally significant sites is not enough to consider a tourist a cultural/heritage tourist (Pedersen, 2002; Isaac, 2008; Timothy, 2011). Rather, a holistic understanding of the tourists' desires and demands is required before researchers can direct them to a particular place or attraction (Witt & Witt, 1995; Uysal, 1998; Poria, Reichel, and Cohen 2011; Lacher et al, 2013; Song & Witt, 2000; Lim, 1997; Johnson & Ashworth, 1990). It should be mentioned that cultural motivations are typically held alongside other motivations (Boley et al, 2011). Understanding the importance of heritage and cultural elements to tourists relative to other attributes of a destination is therefore important in understanding the importance of cultural/heritage tourism.

The Theory of Planned Behavior (TPB) explains behavioral intentions and subsequent behavior of individuals as a result of three factors: personal attitudes, subjective norms, and perceived behavioral control (Ajzen, 1988; 1991). TPB is often used in tourism and hospitality research to predict and examine tourists' intention for choosing a destination (Lam & Hsu, 2006; Ajzen, 2002), decision-making (Quintal, Lee, & Soutar, 2010), tour planning (Sparks, 2007), and motivations (Crompton, 1979; Dann, 1981; Fodness, 1994; Uysal & Hagan, 1993; Hsu & Huang, 2010). One aspect that determines tourist behavior and influences their destination choice is pre-existing and/or provided information and knowledge about certain attractions (Lancaster, 1966). Providing better images from a destination can influence tourists' choice of destination (Goodrich, 1978; Matejka, 1973; Mayo, 1973; Scott et al, 1978).

4.2.4. Fishing cultural tourism

There are a few studies in the academic literature about fishing communities and the role of heritage in their communities; some of these studies focused on intangible fishing heritage such as festivals and traditions (Claesson, 2005). The findings from several studies indicate that fishing provides important cultural assets in coastal areas that contribute to tourism promotion (Acott & Urquh (CHARM), 2012; Erquhart & Acott, 2013; Carver, 2006; Jacob, 2006; Pinder, 2003). In Europe, Heritage tourism has been trending towards the conversion of production spaces into consumption spaces (Kneafsey, 1988). This approach still exists for promoting cultural heritage preservation as one of the possible ways to extract market values out of heritage assets. The previous studies show that many people consider commercial fishing an attractive part of the landscape (Jacob, 2006). Surveys of tourists along the southern areas of the North Carolina coast have increased our understanding of the possible interest in communities' maritime landscape, history and cultures such as fishing (Robertson et al. 2005). This landscape is appealing to tourists as it lets them imagine a simpler time and place when communities were dependent on resource extraction (Hopkins, 1988). These feelings are dependent on the maritime cultural landscape, including the built environment and the interaction of people with the sea (Ford, 2011; Westerdahl, 2011). However, it is important to be able to preserve the authentic aspect of the maritime cultural landscape and not give a false or inauthentic image of commercial fishing (Jacob et al. 2005; Hopkins, 1988).

It has been argued that using commercial fishing as a tourist attraction exploits and destroys the identity of fisheries dependent communities (Jentoft, 1993; Brookfield et al, 2005; Gale, 2005; Kreag, 2001). In order to avoid the negative impacts of tourism, an authentic type of cultural tourism known as community-based tourism has been proposed to counter those affects (Liu, 1994; Ceballos-Lascurain, 1996). A community-based approach to ethnic tourism recognizes the need to promote both the quality of life of people and the conservation of the resources (Scheyvens, 1999).

The present study evaluated fishing heritage as an item for cultural tourism promotion and assessed the state of fishing cultural heritage in four fishing communities in southeastern North Carolina. In the first stage, the study investigates if fishing heritage has been recognized as a tourist attraction in the area of study. In the second, the research explores if tourists are interested in fishing heritage.

4.3. Methodology

The fishing heritage and cultural places in four fishing towns of Varnamtown, Holden Beach, Shallotte and Southport were studied in Chapter 3 of the present research. The studies showed that certain places and items are considered culturally and socially valuable for fishing communities. These items, as a part of living cultural heritage of fishing communities, in comparison with other cultural and natural heritage attractions in the area, have not received enough consideration for tourism promotion. In order to determine the value of fishing cultural heritage for tourism promotion two phases of analysis were conducted:

In the first phase a content analysis was conducted on different tourists and visitors' tiers. Conceptual analysis as a sub-method of content analysis was conducted. Conceptual analysis is a way of establishing the existence and frequency of concepts most often represented by words or phrases in a text (Busch et al, 1994-2012). In content analysis determining a certain number and set of concepts allows a researcher to examine a text for very specific topics. In addition, introducing a level of coding allows new, important material to be incorporated into the analysis process that enhances the quality of research and results (Berelson, 1952; Krippendorff, 2013; and Weber, 1990).

The first phase had two objectives: firstly, to determine if fishing heritage sites and items have been considered of any interest to tourists in the mentioned areas and secondly, to what extent that interest

has been used to promote cultural tourism. For the first objective, since photography is one way that shows items of interest to people, the pictures that have been uploaded by tourists and visitors to the NC Tourism website, Flickr and Google Attraction were analyzed. The purpose was to examine to what extent the cultural and aesthetic values of fishing cultural heritage have been important for visitors and for promoting tourism. Use of data (photos) that already exist in order to extract information from people has already been practiced in some studies (Collier, 1975), although not for cultural tourism studies. For the second objective, the data were analyzed to determine the extent which fishing heritage has been recognized as a tourist attraction to promote cultural tourism and to test the hypothesis that fishing cultural heritage has not got much attention in tourism promotion and management efforts. Thus, this section explores the occurrence of selected terms related to fishing cultural heritage within different texts, provided for tourism in tourist flyers and brochures from visitor centers, as well as relevant on-line sources from 2015 and the beginning of 2016, have been used for the current research (Appendix 4.1 and 4.2 are different websites and current materials between 2014 to 2016 on different aspects of tourism in N.C.) For the second phase a survey with the aim of understanding possible visitors' interests in the commercial fishing heritage and history was designed. In this section, a combined method of traditional interview, with a type of photo elicitation is applied. In this type of interview, the simple idea of inserting photographs into a research interview is used (Harper, 2002: 13). The questionnaire comprises of six sections: 1) Pre-knowledge test, 2) Different coastal places that you have visited in the past and 3) Specific places that you might consider to visit, 4) Values that you might attribute to these places and items, 5) Different places you might consider visiting in the future, 6) General demographic information for classification purpose only. Part of the survey comprises of a visual and explanatory interview that was conducted among potential tourists to the area. The aim is to explore if certain types of fishing cultural heritage are of interest and hold attraction value for visitors and tourists in the area. Fishing heritage sites and items that are the topic of this study, are the ones that the study in Chapter 3 proved to be of sociocultural value to the fishing communities in Brunswick County.

Furthermore, selecting a tourist destination is a complex process of the evaluation of a number of choice criteria (Moutinho 1987; Woodside and Lysonski 1989; Vander Stoep, 1998). Therefore, in the survey a choice analysis was conducted to compare the level of tourist reverence towards different types of

heritage and visiting sites at the area (Appendix 4.4: Survey questionnaire & Appendix 4.5: The IRB approval obtained from ECU).

In addition to graphing the data and interpreting the graphs, a series of correlation and T-test analyses were conducted for reporting more specific and statically reliable results.

4.4. Analysis and results

Analysis and results are presented in two main phases of tourist interest study and survey of potential tourists on fishing heritage:

4.4.1. Phase 1: Tourists interest

To understand the state of fishing heritage attractions in the tourism industry two analysis were conducted: one to assess if tourists, in general, are interested in fishing heritage in Brunswick County; and the other, to evaluate if tourism industries have considered fishing heritage as an item for tourism promotion.

a. Tourists attraction topics based on photo analysis

The first 200 images from Flickr and the first page (about 400) from Google images that have been taken by tourists and visitors to the coastal areas in North Carolina were selected. Different codes were assigned to these pictures according to their topics. These codes were assigned after having studied them with two colleagues who have tourism and anthropology background. In general, we agreed on 10 codes: 1) Personal and beach related; 2) Outdoor sports; 3) Sea-sports; 4) Coastal nature; 5) Commercial fishing; 6) Recreational fishing; 7) Seafood; 8) Culture, art, music, etc.; 9) Piers; and 10) Maritime heritage related (Appendix 4.3)

Although the total number of pictures that were looked at for each town numbered about 600, since some pictures were repetitive and/or related to real state or/and other studies such as graphs and charts, in the end the total numbers of pictures here do not add up to 600 for each town. The results have been summarized in the table 4.1 and figure 4.1. In the table, the fishing related attractions are itemized, but in the graphs all the fishing elements are considered together as commercial fishing cultural heritage.

Table 4.2: The results of tourists' photos analysis

Type of Image	Personal –Beach related	Outdoor Sport Golf, etc.	Kayaking-Sailing-Sea sports	Coastal Nature	Commercial Fishing					Recreational Fishing	Seafood	Culture, art, music, etc.	Piers	Maritime heritage related
					Boat	Fish house	Fish market	Net	Seafood Restaurants					
Cities														
Flicker images (The first 200 images)														
Varnamtown	35	2	2	20	16					2	0	5	1	0
					9	5	0	2	0					
Shallotte	17	33	9	17	17					3	10	3	1	0
					8	0	0	3	6					
Holden Beach	69	7	15	164	23					4	7	0	20	0
					14	3	3	2	1					
Southport	13	0	13	30	13					1	0	2	12	9
					3	6	0	0	4					
Google images (1st page images ~ 400 pics/ Attractions)														
Varnamtown	7	4	6	32	33					5	4	6	6	2
					22	8	0	3	0					
Shallotte Mostly real states	1	1	0	24	7					2	0	0	3	1 City sign
					2	0	1	0	4					
Holden Beach	33	4	10	171	24					17	1	0	23	2
					17	4	1	0	2					
Southport	5	0	6	28	27					5	2	3	6	8
					8	3	1	2	13					

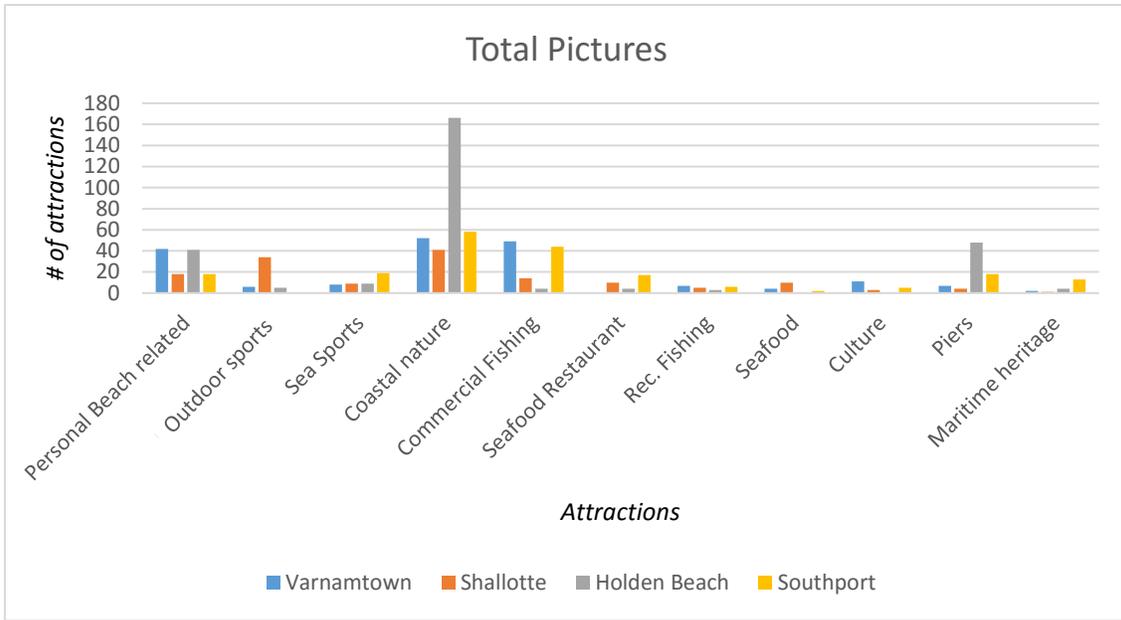


Fig. 4.1: The number of different attractions in each of the four communities that visitors took picture of and are found/uploaded in the two most popular picture websites: Google Attraction Pictures and Flickr.

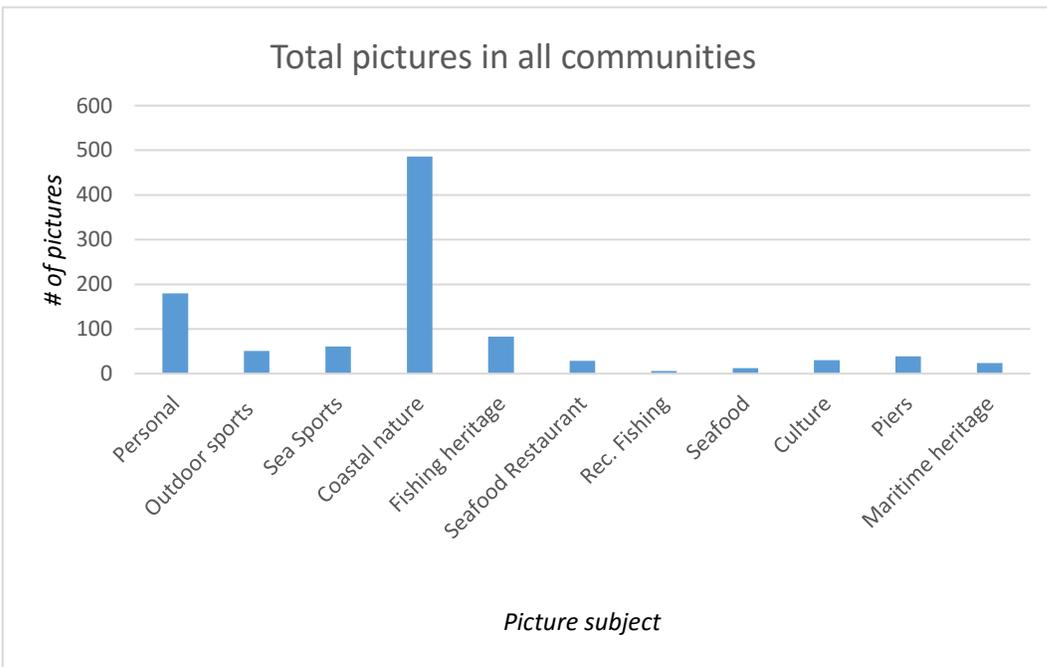


Fig. 4.2: The total number of different attractions that visitors took pictures of and are found/uploaded in the two most popular picture websites: Google Attraction Pictures and Flickr. In this graph all fishing heritage items are put together.

The graph, in Figure 4.2, compiles all pictures together in the four communities of Holden beach, Southport, Varnamtown and Shallotte, and shows that the items that got the most attention in pictures by visitors are first coastal nature, second personal photos, third fishing heritage. This comparison among a number of pictures from different items shows that after coastal nature and personal pictures, items related to commercial fishing have been of interest to visitors to visit and/or take pictures of, which demonstrates a level of attraction among tourists towards commercial fishing.

b. Visitor centers and tourist promotional materials

For the first phase of study, data from several sources were collected. The primary source was the Official tourism website of NC Coast (VisitNC.com, 2016a). The tourism attractions were looked up according to the case study areas, from the search engine of the tourism website (VisitNC.com, 2016b). The search words of Commercial, Fish, Fishing, Seafood. Seafood and Commercial were used. Among them only 'fishing' brought up some results which are mainly seafood festivals, recreational and sport fishing, and charter boats (Appendix 4.1).

The results in section 4.1.1 showed that tourists and visitors have some level of interest in fishing culture and heritage. However, the content analysis of the tourism media, tiers, websites and visiting centers' brochures revealed that not much attention and publicity have been given to the fishing heritage in tourism industry in North Carolina. Previous studies show that awareness raising, good publicity and exhibits play a significant role in promotion of certain type of heritage/cultural tourism (Hargrove, 1995). Therefore, based on Flowchart 01, this study continued to explore if the level of knowledge and information can affect the level of interest in visiting the potential attractions.

4.4.2. Phase 2: Survey of potential tourists on fishing heritage

In the second phase, the results from the survey are used. The survey was distributed on-line through websites that are used to attract and communicate with tourists in North Carolina. In addition, some random, face to face interviews with tourists on the spot were conducted while visiting these different locations. In total 61 surveys were completed. However only 45 were useful, and two responses out of 45 were not complete. In these two surveys the part of the responses that seems complete and consistent

with the rest of data were used for analysis. The results from the first five sections of the survey: 1) Pre-knowledge test 2) Specific places that you might consider to visit, 3) Values that you might attribute to these places and items, 4) Different places you might consider visiting in the future, 5) Different coastal places that you have visited in the past, are discussed here. The last section: “6) general demographic information” is only used for classification purposes. In this survey, re-identification of the respondents is not possible and all surveys are anonymous. The GIS coordinate recorded for the on-line surveys cannot reveal the location of respondents since they could have responded from anywhere in the world, connected to internet. However, the respondents were asked to indicate their residence location. The target group was people from North Carolina who might visit the coast for tourism purposes.

1. Pre-knowledge test

The pre-knowledge section has two aims: one to assess the level of public familiarity with potential tourist attractions, and two, their level of prior visitation of those attractions. The respondents were asked whether they are familiar with different types of potential attraction sites, and if they have visited any of them.

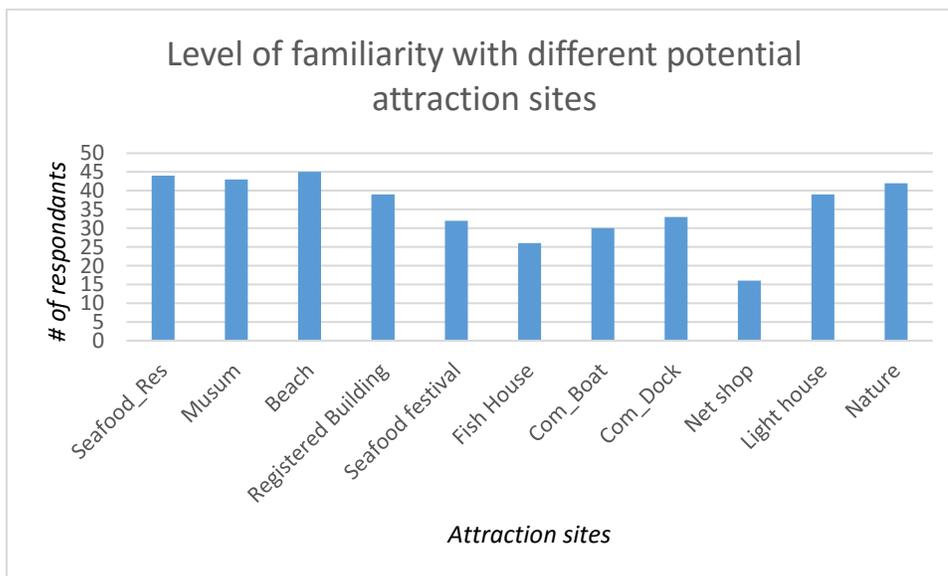


Fig. 4.3: Showing the level of familiarity of respondents with different categories of potential coastal attractions.

The total sum shows that the level familiarity is lower when it comes to some fishing cultural aspects. Nature and the beach have the highest rates, seafood restaurants, museum, light houses and registered buildings stand at high levels as well. Among fishing cultural related items, seafood festivals and commercial docks hold higher rates, but commercial boats, fish houses and net-shops respectively receive less levels of familiarity [Fig. 4.3].

In another set of questions, the respondents were asked if they have visited the heritage attractions mentioned in the previous question. The result show that the same potential fishing heritage attractions that have received less levels of familiarity had less levels of visitation as well, even if, respondents were familiar with those items, sometimes they have not visited those items [Fig. 4.4]. This can be due to the fact that the level of familiarity (including knowledge, information, etc.) is less about certain attractions, and therefore they received less visitation. Another reason could be that the level of provided information holds low quality and entices low visitation interest, and therefore, the level of visitation is lower.

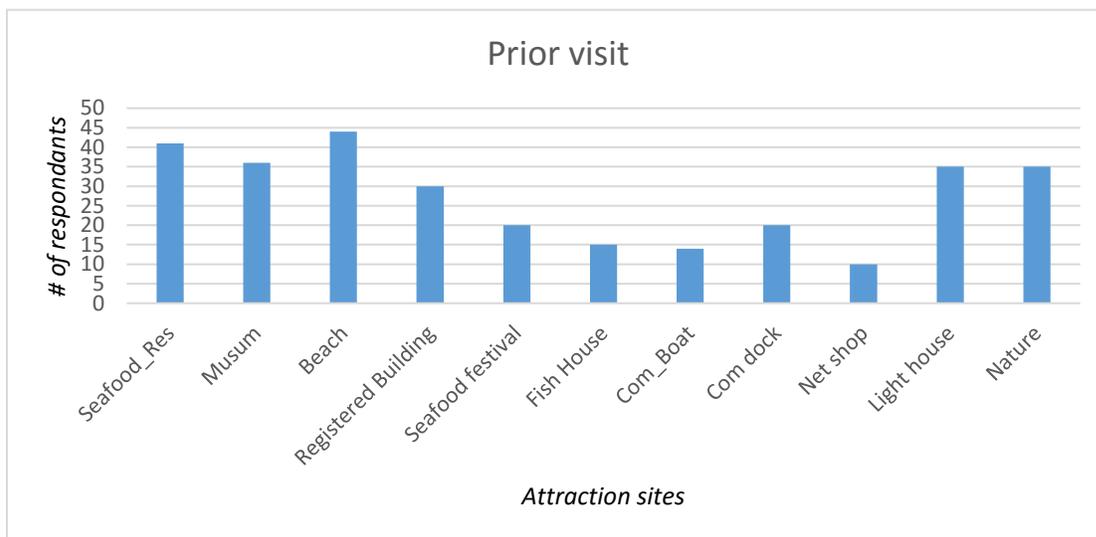


Figure 4.4: This shows how many people have already visited different categories of potential coastal attractions.

A series of correlation analysis was conducted between the level of previous knowledge about fishing heritage attractions (general familiarity) and people’s likelihood of visiting (wish) these types of attractions in future. The results show that there is a significant correlation between these two variables ($P= 0.035 < 0.05$, $R^2=0.316$). The result is visualized in figure 4.5.

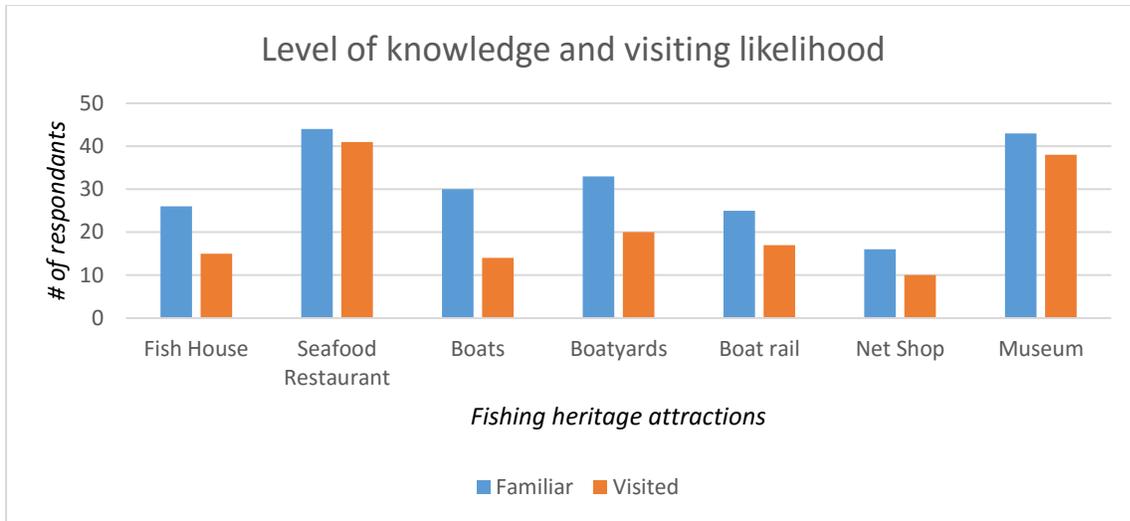


Fig. 4.5: Comparison between the familiarity with and visiting likelihood to different categories of fishing heritage attractions.

The two characteristics of 'cultural' and 'historical' are considered important criteria in promoting preservation of specific sites for heritage related purposes (Queensland government, 2013; UNESCO, 1972; National Historic Preservation Act of 1966; NPS.criteria, 2016; North Carolina State Historic Preservation Office). The public opinion about these characteristics attributed to specific commercial fishing items were examined. People's perceptions about different attractions play an important role in promoting a subject as historically and culturally important. Therefore, the study explores if the public believes commercial fishing contributes to history, culture, sense of place and/or economics, and if certain sites hold any cultural and/or historical fishing characteristics. The result which is summarized in figures 4.6 and 4.7, shows that most people believe commercial fishing contributes highly to culture, history, sense of place and economics

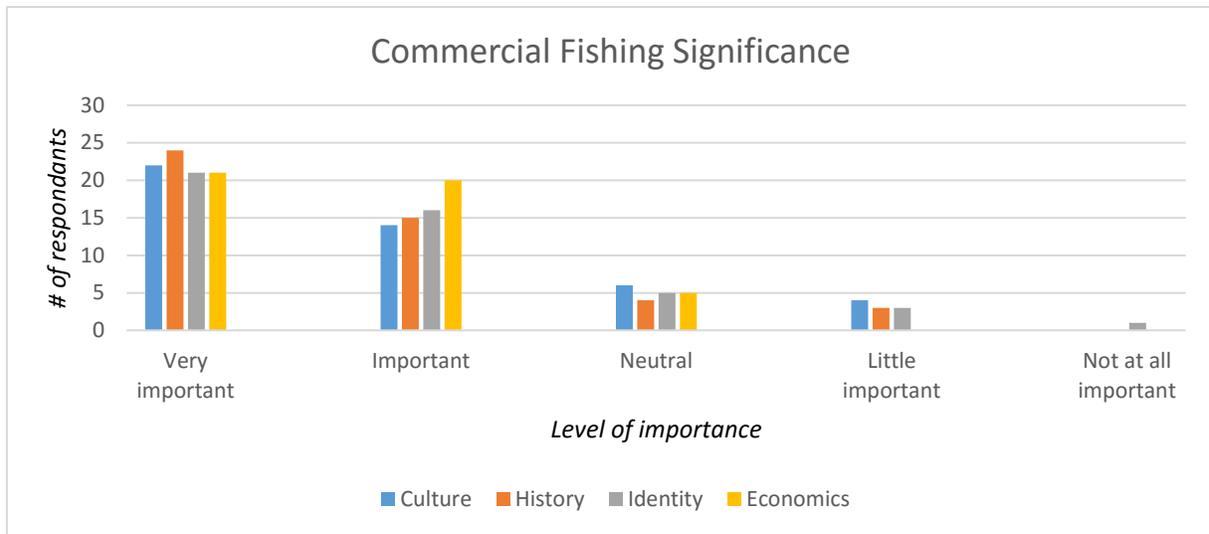


Fig. 4.6: The level of contribution that fishing heritage would make in culture, history, sense of identity and economy according to the respondents

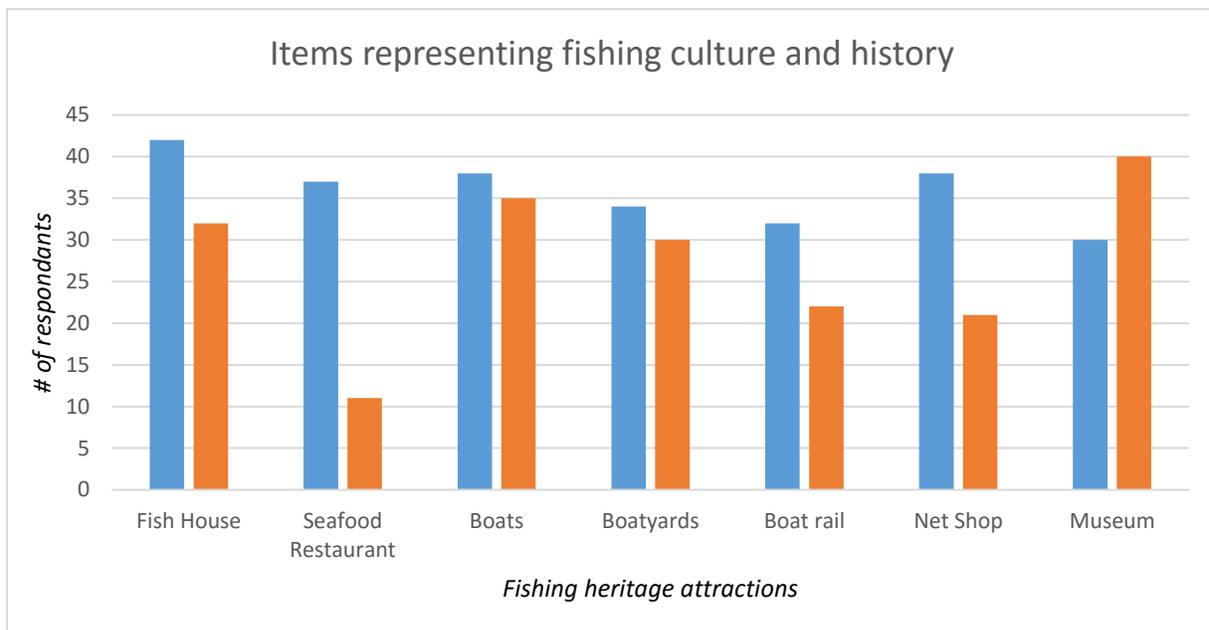


Fig. 4.7: The level of representation of fishing culture and history in different categories of fishing heritage according to the respondents.

According to this study, respondents agree that all of these items represent fishing culture to a great extent: more than 90% of respondents agree that a fish house represents fishing culture; more than 80% agree that boats, seafood restaurants and net shops represents fishing culture, 70% also agreed that museums and boat rails represents fishing culture. However, the historical characteristics varied for

different items. In addition to museums, fish houses, boats and boatyards are considered historically important by more than 80% of respondents. Boat rails and net shop have been regarded historically important by more than 45% of the respondents. Seafood restaurants got the lowest level of historical significance by 24%.

2. Different places you might consider visiting in the future

Respondents were asked to rate their level of interest in visiting a several potential attractions, including fishing cultural heritage items (from Extremely uninterested, Uninterested, Neutral, Interested, Extremely interested). Non-related fishing heritage items were included in the question in order to assess the reliability of the answers. The result is demonstrated on the graph in figure 4.8.

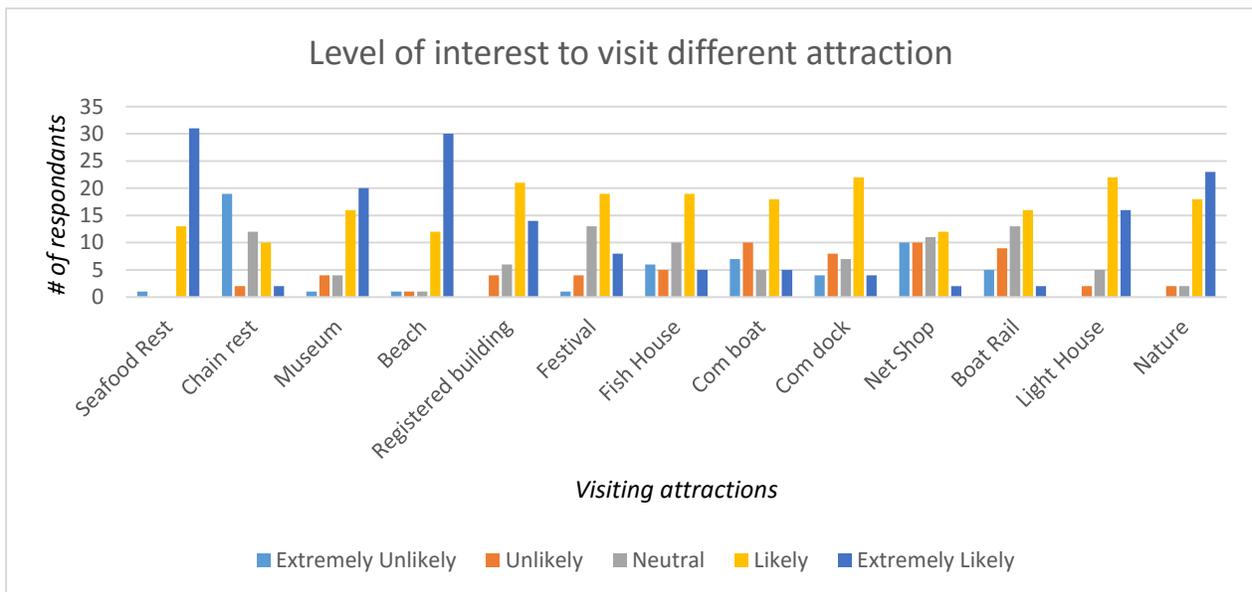


Fig. 4.8: Shows the number of respondents' level of interest in visiting potential categories of attractions.

The results show that beaches and seafood restaurants with more than 66%, museums and nature with more than 44% rated extremely interested, hold the highest level of interest-to-visit. The registered buildings, seafood festivals, commercial boats, fish houses, commercial docks and lighthouses of possible attractions got a considerable level of interest-to-visit (likely) of more than 40%. The reasons for their visit of certain sites and items are further explained in the analysis.

3. Prior visits to coastal attractions

After the general examination of the level knowledge and interest in different potential attractions, the respondents were asked if they have visited any of the mentioned attractions, and if so to state the quality-of-visits through ranking their satisfaction from extremely unsatisfied to extremely satisfied through ordinal values of 1 to 5.

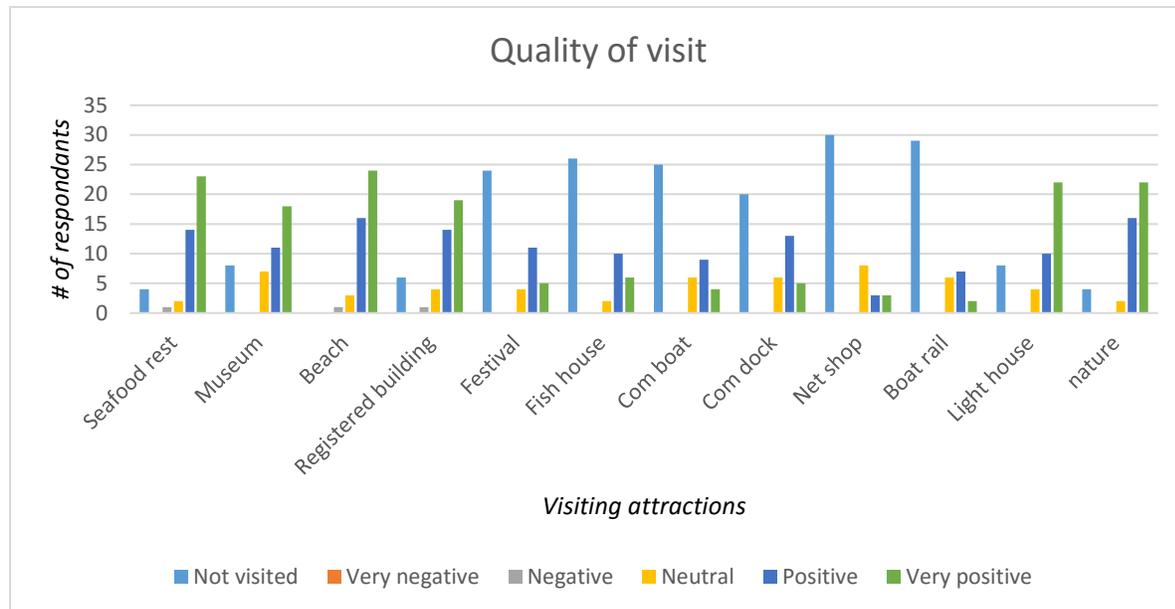


Fig. 4.9: Shows the quality of prior visits to potential categories of different attractions, if any existed before.

Running correlation analysis between the quality of visit and the likelihood of visit, revealed that for some attractions the quality of past visits is positively correlated with the likelihood of visit in future. The results from this analysis is summarized in figure 4.9 and table 4.2.

In addition, people who are more familiar with fishing heritage attractions believed that the heritage makes a place more attractive to visit. The analysis shows that there is significant correlation between the level of familiarity of respondents with fishing cultural heritage and their assumption that fishing heritage makes a place more attractive to visit ($P=0.048<0.05$, $R^2=0.303$).

Table 4.2: The quality of past visits is significant in likelihood of visiting the fishing heritage attractions in future.	
Fishing heritage attractions	P-Value <0.05 is significant
Seafood restaurant	P= 0.00, R ² = 0.617
Registered Buildings	P= 0.01, R ² = 0.482
Seafood Festivals	P= 0.00, R ² = 0.580
Fish houses	P= 0.02, R ² = 0.445
Commercial Boats	P= 0.04, R ² = 0.425
Commercial docks	P= 0.00, R ² = 0.662
Net shop	P= 0.007, R ² = 0.401
Boat rail	P= 0.00, R ² = 0.556
Lighthouse	P= 0.002, R ² = 0.453

These assessments help to provide a general understanding about the level of knowledge and interest in different potential attractions. Items such as a beach, nature, museums, registered buildings and lighthouses were used to provide a bearing for comparison purposes (Landry et al, 2016; Bin et al, 2005). These items have already been considered tourist attractions by the tourism industry in North Carolina. Using them in comparison analysis provides a rough norm in assessment process and evaluates the level of respondents' clarity about their responses.

In the following section, the specific potential commercial fishing attraction sites in Brunswick County, those significant for fishing communities, are evaluated for visitation and preservation purposes by the public. Also, the reasons that these certain elements might be of interest are explained.

4. Specific places for potential tourist attraction

The objective of this section is to explore the level of tourists' interest in visiting specific fishing cultural heritage in Brunswick County. Based on the study in Chapter 3, the members of fishing communities in Brunswick County regard 14 fishing material culture as being sociocultural significance in Varnamtown, Shallotte, Holden beach and Southport. The result from the tourists' survey showed that there is quite a considerable level of interest in visiting these specific features, although it varies among these features. 64% of respondents are very interested in the Inlet View restaurant, not only because of good fresh seafood, but also because of the history that the place holds and its connection with fishermen. More than 46% of respondents stated that they are very interested and more than 30% moderately interested, in visiting the oldest shrimp boat, shrimpers in action, Southport Maritime Museum and Old American Fish Factory (now a restaurant) for various reasons including historical and cultural values of the sites, as well

as interest in learning more about traditional fishing. More than 35% of respondents stated that they are very interested in visiting Varnamtown fish houses and the abandoned fish house and its shipwreck in Holden Beach. More than 33% of respondents stated that they are interested in visiting sites such as Beacon Fish house, boat rail, Holden Seafood, Lloyd’s Oyster House and Tatum Fish house. The only place that got the lowest level of visiting interest is the Shallotte Boatyard (40% not interested and only 13% very interested). These results are summarized in figure 4.10.

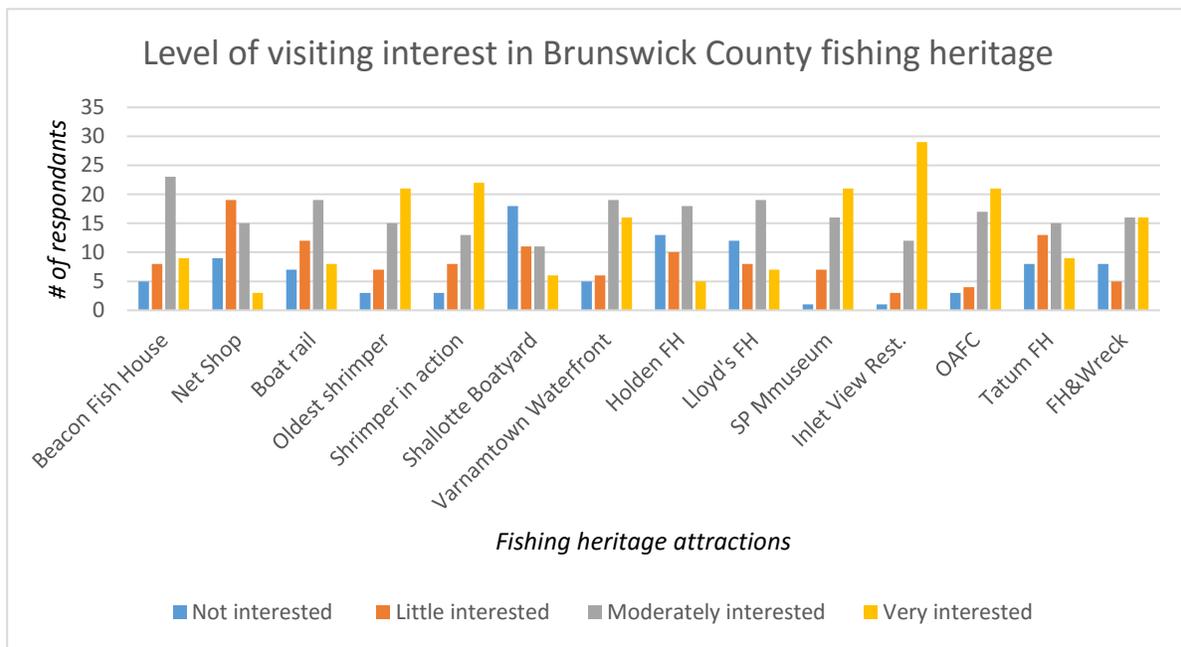


Fig. 4.10: Shows the level of respondents' interest in visiting specific potential attractions in Brunswick County.

5. Values attribute to potential attraction

To understand people’s behavior, tourists were asked to state a reason(s) for their interest in visiting certain sites. A text analysis was conducted on the open-ended part of the surveys. All in all, the top reasons of visiting the fishing heritage sites are indicated as history, seeing the work and action, buying seafood along with aesthetic and cultural reasons. For each reason to visit, one unit of value has been allocated to the potential attractions. The total sum of these value-units provided an idea about the sites and ranked them from the most attractive to the least attractive ones. Beacon Seafood, the oldest shrimp boat, and the Old American Fish Company are on the top of the list with the highest value-units. In addition to the Inlet View restaurant on the top of the list for visitation, Varnamtown Waterfront, the oldest

shrimper, and the Old American Fish Company have the most number of people willing to visit them. The results are summarized in figures 4.11.

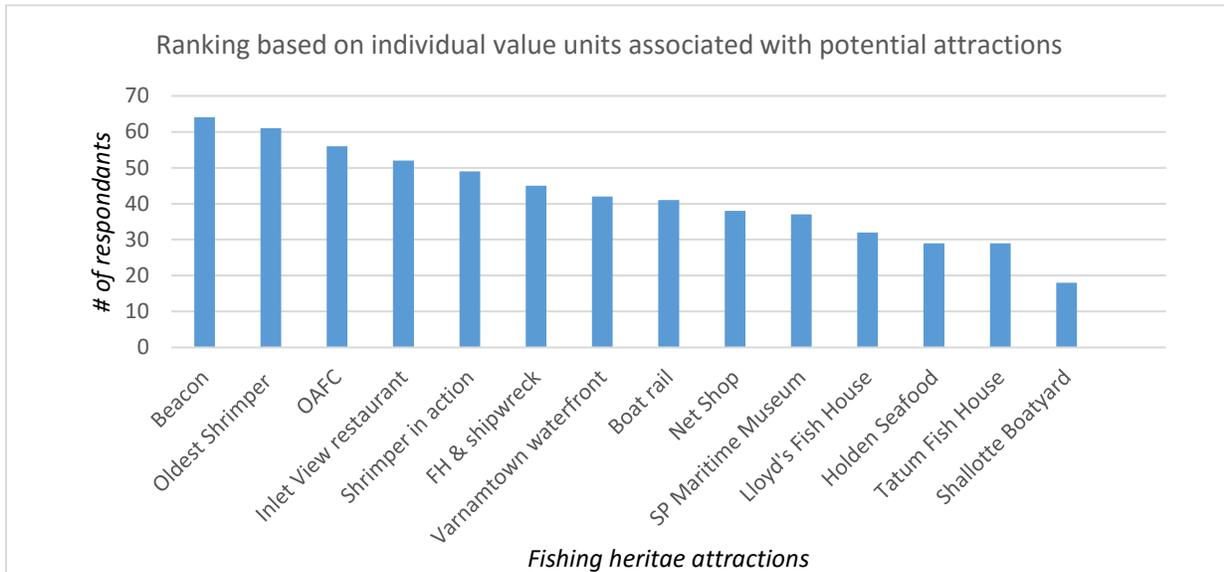


Fig. 4.11: Shows ranking of specific potential attractions based on the different value units that was assigned to the sites by respondents. Beacon Seafood received the highest level of values associated with it for visiting.

To understand whether awareness about different locations can change the level of visiting interest, the responses before and after providing information about the sites are compared. For each site first the respondents were asked if they would consider visiting the site. For the ones who said no, they were provided with a brief information about the importance of the site and a few pictures, and then again they were asked if they might consider visiting the site. The effect of providing information in changing their response from 'no' to 'yes' was analyzed through a T-test.

Responses and their reasons for visiting or not visiting varies. Some respondents stated that they are not interested in visiting fishing related sites due to the fact that they see these sites as industrial and commercial, which are not interesting for tourism purposes. Some stated that they are not interested in fish, the smell of fish, seafood or fishing in general, and therefore fishing related sites are not appealing to them. Some respondents indicated that the location, facilities and what these sites offer are important factors for them to decide to visit or not. Lack of proper information and knowledge about the sites and what these locations would offer were other factors in the lack of interest in visiting some sites. However,

some people mentioned that factors such as learning about the fishing history and culture, gaining a new experience, and buying fresh seafood are factors that would entice them to visit these sites. Some respondents are interested in visiting these sites due to their personal interest, profession and also curiosity. Some respondents indicated that they might not visit a sole location, but if there are other attraction items and places close by, they would be more enticed to visit.

Explanatory analysis of interest in visiting specific sites based on the interviews is presented in Appendix 4. 6. Table 4.3 shows the percentage of respondents who changed their responses regarding visiting specific locations after receiving more information. In some cases, such as Tatum Fish House, Old fish house & wreck, Southport Maritime Museum, Holden Seafood, and shrimp boat in action, no changes were noted before and after providing information such as a brief history and pictures, but for the rest of fishing related sites the interest in visiting those sites were increased after providing extra information.

Overall, the survey shows that providing more information, at least about some of the mentioned possible attractions, can increase the level of interest in visitation. This case is significant specifically for the oldest shrimper and Varnamtown Waterfront. The Pearson Correlation, ran on this data, showed that in total the changes from 'No' to 'Yes' for visiting fishing heritage in general is significant ($P=0.034<0.005$, $R^2=0.569$).

Location	Total No before info	Total No after info	% Change No to Yes
Beacon Seafood	19%	15%	22%
Net shop	27%	21%	23%
Boat rail	25%	19%	25%
One of the oldest shrimpers	10%	6%	40%
Shrimp boat in action	12%	12%	0
Boatyard in Shallotte	30%	28%	7%
Varnamtown waterfront	16%	10%	37%
Holden seafood	28%	28%	0
Lloyd's Oyster House	28%	26%	7%
Southport Maritime Museum	2%	0	0
Inlet View restaurant	8%	6%	25%
Old American Fish Company	8%	6%	25%
Tatum Fish House	19%	19%	0
Old fish house & wreck	19%	19%	0

4.3. Conclusion

This study highlighted that there is a strong potential to promote fishing heritage tourism and interest in fishing communities to support commercial fishing not only as an occupation for fishermen, but also as an attraction for cultural tourism. The results show that although there is a considerable level of interest in visiting fishing heritage sites, awareness plays a strong role in attracting cultural tourism to traditional commercial fishing, and visitor centers have overlooked commercial fishing as an attraction for tourism promotion. The gap in people's knowledge about many aspects of commercial fishing and their heritage, in addition to the lack of attention from the tourism industries to this tradition and its cultural products as a resource for cultural tourism promotion, has caused fishing heritage to be marginalized.

The analysis from the current study shows that the level of knowledge, either prior knowledge or currently provided knowledge, is determining in the consideration of whether to visit or not. Therefore, it is necessary to encourage policies to promote heritage tourism in fishing communities through education, awareness raising and marketing this heritage.

For this purpose and to attract tourists fishing traditional sites, the present study suggests:

1. Increase the visibility of fishing products through visitor centers by providing brochures and online information.

2. Enhance the visitor experience by making sites come alive through additional or special programming and events that draw repeat customers and attract new audiences such as organizing more local food festivals, storytelling events, small authentic fishing tours, etc.
3. Focus on authenticity and quality to provide “an authentic and different experience” for visitors
4. Conduct more market evaluation to track visitation and predict trends, and identifying more cultural assets for more and better attractions.

The abovementioned steps can be taken as primary steps toward promoting fishing cultural heritage in Brunswick County. In addition, the author suggests that the results of each step and action be evaluated. Although the four fishing communities, studied in Brunswick County, are different, if a serial heritage nomination that was suggested through the previous paper can be implemented, a more harmonized action for heritage preservation and heritage tourism promotion can be planned.

Ethnic tourism has been considered to have several motivations such as cultural motivation; the modern search for roots (Conzen et al 1999), status and prestige motivation, recreational or physical motivation (MacIntosh and Goeldner, 1990) and symbolic, emergent, or invented ethnicity as motivations to celebrate one’s ethnic background (Gans, 1979). The result of the study in Chapter 3 showed that fishing communities would like to keep fishing as their occupation and value their traditions. In addition, the current study demonstrated that tourists are interested in certain types of fishing heritage and tradition. Therefore, as a result of the present study, the author would add “revitalization and preservation of a tradition” as a motivation to these categories.

In brief, considering the cultural values of fishing heritage, which is a fading cultural resource, as well as the interest in the fishing communities and tourists toward this heritage, the current study concludes that actions towards protection, preservation and promotion of fishing heritage can benefit both the fishing communities and tourists, and improve a more sustainable local economy.

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Appendix

Appendix 4.1: Data for Fishing Tourism Industry Content Analysis

Southport:

Southport marina: Full-service marina offering in-water slips and dry storage. Boat repairs. Fishing & sightseeing tours, boat rentals and sales.

North Carolina Maritime Museum - Southport: The North Carolina Maritime Museum at Southport tells the story of the Cape Fear region and its people.

Southport Angler Outfitters: Whether you prefer fly fishing or light tackle, we will fill your needs on a day's fishing in the Southport, Oak Island, Bald Head Island area. It's your day, so please inform us of your fishing type preferences. For your convenience, we provide free pickup service from all area marinas, including Bald Head Island. We offer fishing trip packages that include first class waterfront lodging. Check out the fishing reports to see what's biting and let's go fishing!

My Way Fishing Charters: Inshore and near shore charter fishing. Custom cruise trips for sight-seeing tours, special events, and moonlight tours also available.

South Harbour Village Marina: Excellent recreation destination directly on Intracoastal Waterway in Southport. Only 1 mile from ocean and beaches. Featuring deep water transient boat dockage as well as fuel (gas and diesel) and ice. Property also offers dining options with a selection of 2 restaurants. There are many charter boats that operate from the marina that offer fishing, boating and sailing trips.

NautiGirl Charters: Based in beautiful Oak Island and outfitted for top performance and luxury, NautiGirl is the perfect sportfishing vessel for day or extended charters and is sure to please both serious and recreational anglers alike. NautiGirl offers spacious accommodations and every amenity for entertaining family and friends for day and evening. Whether you seek a day of fun in the sun exploring local waters or a romantic sunset cocktail cruise, NautiGirl offers the ideal mix of speed, agility, grace and comfort. To arrange your custom charter, contact Captain Vanessa Martin.

Yeah Right Charters: Yeah Right Charters is a deep sea fishing charter that fishes from the inshore reefs to the gulfstream. We have a 34' Cris Craft called the Yeah Right II docked at South Harbour Marina. Captained by Capt. Butch Foster, we attempt to let our customers experience the fun of fishing and the beauty of the seas and what is within. Come fish with the charter that fishermen and women prefer and locals recommend.

For Carolina Beach:

Blue Marlin Fishing Charters: Blue Marlin Fishing Charters is open year round. We charter for sportsman, family or company outings. Up to 6 people per trip on split or open charters. We offer all day and half day trips and Gulfstream fishing.

Carolina Explorer Fishing Charters: Inshore and coastal light tackle fishing charters. We can accommodate everyone from the serious angler or a family looking for a great fishing trip.

Water Bill Fishing Charters: Charter fishing, boat rides, sunset cruises. Family fun on the water.

Hocus Pocus Offshore Charters: Carolina Beach Reasonable rates, clean & fast. We specialize in catching fish!

Fired Up Fishing Charters: 1/2 day, all day offshore fishing. 42' Carolina Sport Fisherman. We offer split charters.

Class Action Fishing Charters: 41' Viking Sportfisherman-Twin diesels, latest in electronics, air conditioned, and fun gallery. All rods, reels, bait and tackle are included-also a mate is provided for your convenience. Available for King Mackerel tournaments, Marlin tournaments, tarpon fishing, dive trips, sightseeing cruises, and dinner cruises. Split charters are available.

Musicman Charters: Charter the Musicman and experience the adventure of Southeastern North Carolinas' Inshore, Offshore and Gulfstream Fishing for a wide variety of Pelagic Species. Captain David knows all the secret fishing holes! Experience the excitement as you reel in the big ones and with ultra-modern fish finding equipment and the latest fishing tackle, you need only bring your food, drinks....and camera!

Fish Witch Charters: Here at Fish Witch Charters we specialize in catching fish. Our charters offer a wide variety of services and the best in sport fishing. Whether you're looking for a fun day of offshore fishing or just a half day of inshore fishing or sightseeing, we can make your "fishing dreams" a reality. Book a trip with us and you'll be "hooked" forever!

Big Game Charters, LLP/Fish Dance: Carolina Beach fishing with the pros aboard Fish Dance - Deep Sea fishing charters. Specializing in all types of fishing, Marlin, Tuna, Wahoo & Dolphin. All day and half day charters.

Large Time II Charter Boat: 55' Sportfisher charter boat, 1/2 day or all day gulfstream fishing.

Lookout Charters: Fish with Captain Mike Dennis for some outstanding grouper and snapper fishing. Great family charters for Spanish Mackerel and King.

Cape Fear Guide: Capt. Mike Dennis offers inshore & near shore fishing charters for the novice fisherman to the more experienced angler, family bookings are welcome. The goal is to provide every charter with an experience on the water, they will enjoy, and these are hands on fishing charters, where the angler can see firsthand, the techniques, used in light tackle fishing.

Carolina Beach State Park: Wind your way through intriguing trails of natural habitats, try your luck at fishing or take a boat out for a spin. These are just some aspects of the wondrous Carolina Beach State Park! Enjoy camping overnight in this 761-acre park of lush lands featuring many indigenous species of plants and animals including the coveted Venus Flytrap. For your convenience the park has a marina providing access to some of North Carolina's best fishing spots. It also has a secluded camping area beneath towering trees and miles of hiking trails that traverse a variety of distinct habitats so you can enjoy the true natural environment of the area!

For Shallotte:

Ocean Isle Beach Fishing Center: The Ocean Isle Fishing Center is home base for anything and everything related to area water sports and fishing. We are a full-service outfitter and also carry unique island-style clothing, gifts and accessories. The water sports activity center features parasailing, Jet Ski,

kayak and boat rentals. The fishing fleet consists of charter boats that specialize in everything from backwater fishing for flounder to offshore Gulf Stream fishing for tuna and marlin.

Ocean Isle Yacht Club: Dry stack boat storage - indoor and outdoor. Wet slips. Boat rentals - pontoon and skiffs. Boat and engine repairs and maintenance. Ships store: boating supplies, bait, fishing supplies, gas and diesel fuel. Boat ramp.

Varnamtown:

In this website, Varnum or Varnamtown does not exist! <http://www.visitnc.com/cities-regions?o=Content.asort&d=asc&l=10&pg=1&cr=766&cp=0&a=1145&p=10&c=684&k=fish>

A little bit about fishing: <http://www.starnewsonline.com/article/20141013/ARTICLES/141009653>

Appendix 4.2: Southeastern NC attractions, Data for Tourism Industry Analysis

In the NC, although there are several water related activities listed, experiencing about commercial fishing is not mentioned at all¹³. Despite the fact that Southport has been a fishing town and still many tourists go there for the fresh local seafood, fishing as a part of cultural heritage of the area is not highlighted¹⁴. However, charter boats and recreational fishing is a part of the activities.

Shallotte Tourism

When visiting Shallotte be sure to enjoy the local shops, great fishing, golf courses, as well as many other activities¹⁵.

Annual events:

Buddy Kelly's Farmers Market

Buddy Kelly's Farmers Market is located at Riverside Park which is at the corner of Whiteville Rd and Main St in Shallotte. The Farmers Market begins toward the end of April. Click here for more information.

Summer in the Park

Gather up the family and come to Rourk Gardens in Shallotte for great entertainment this summer! Listen to some awesome bands; see some great movies and it's all free! Click here for the schedule this year.

Shallotte Christmas Parade

The Town's Christmas Parade is held every year on the first Saturday of December and begins at 10:00am. The roads close at 8:00am. The parade starts from the intersection of Main St. & Whiteville Rd. and ends at the intersection of Main St. & Smith Ave. If you would like to be in the parade please fill out the Christmas Parade Application. If you would like to be a vendor at the parade please fill out the Christmas Parade Vendor Application. Please contact Rachel Johnson for more information.

Brunswick Islands Home & Garden Show

The Brunswick Islands Home & Garden Show is held at the Sea Trail Convention Center in Sunset

13 <http://www.visitnc.com/signature-attractions>

14 http://www.ncbrunswick.com/fun_and_adventure/attractions

15 http://www.townofshallotte.org/index.asp?SEC=CFF03248-91B7-45EA-BBDF-8FFC71A02537&Type=B_BASIC

Beach. For more information about this event please contact the Brunswick County Chamber of Commerce at (910) 754-6644.

North Carolina Oyster Festival

This festival is held in the Ocean Isle Beach area. For more information about this event please contact the Brunswick County Chamber of Commerce at (910) 754-6644.

North Carolina Festival by the Sea

This festival is held in the Holden Beach area. For more information about this event please contact the Brunswick County Chamber of Commerce at (910)754-6644.

Varnamtown Tourism

Fishing and hunting, and forest and logging workers (13%) one of the main occupations in Varnamtown.

Read more: <http://www.city-data.com/city/Varnamtown-North-Carolina.html#ixzz3RHKqVbpg>

Southport

<http://www.cityofsouthport.com/>

FT. JOHNSTON-SOUTHPORT MUSEUM & VISITORS' CENTER

203 E. Bay Street - directly behind the NC Maritime Museum

NC Maritime Museum at Southport

Appendix 4.3: Codifying pictures for content analysis

The discussion for codifying the pictures started with one of my colleagues from cultural heritage background. We looked at the pictures and tried to associate codes to the pictures and their topics. There were many pictures with wedding, gathering, family and their pets, etc. at the beaches.

There are many pictures of the sea, sunset/sunrise, dunes, flora and fauna. Sometime with people or structures in them. So many pictures of the ducks and piers. There were pictures from different aspects of commercial fishing. Some pictures showed a combination of different coastal and maritime aspects that could be categorized as maritime heritage landscape. However, this maritime heritage could be related to commercial fishing or other aspects. We separated the ones related to commercial fishing from others.

Restaurants, seafood and seafood festivals were an interesting topic to discuss. In the end we decided to separate them and have one category for seafood which includes raw and cooked seafood, dishes, etc. But the ones that have stress on the restaurant itself were grouped separately. In addition, we were hesitant about the seafood festivals: are they considered cultural heritage? Are they seafood? Etc.

One of our main indicators was to read the descriptions about the pictures, and for a few, where there was contact details available, I contacted the person and asked him/her about her motive of taking those pictures.

One main discussion was if we can associate more than one code to the pictures.

In addition, we added categories of outdoor sports, with distinguishing between recreational fishing and other sports (jet ski, kayak, etc.)

The results of this assessment were communicated with another colleague who has a maritime archaeology background.

Distanced communication with a Maritime Archaeologist colleague:

Not sure if this would provide any additional info: I noticed many photos that were “real estate” based, promoting the sale of a house because it could see the waterfront or was on waterfront. Also many shots showcasing “waterfront beautification” work done in the towns, new walkways, path, pagodas, old-fashion

looking lights, etc. And lots of maps to show where the town was located along with aerial photos which might be of assistance to mariner tourists transiting on the Intracoastal Waterway. But these I'm sure fit into other categories somewhere. For your project, all the other categories that you discussed make sense to me.

However, I think every time we search the picture, the search engine brings up different/more pictures. But in general it seems the categories should work. I also think that sometimes more codes can be associated with one picture.

Final agreed Codes:

1. Personal and beach related: these are the pictures that have people in them and seem more personal, including family and friend and personal events. They have a wide variety from weddings at the beach, group pictures, etc.
2. Outdoor sports: these are pictures that show sports activities such as golf, volleyball, etc. These pictures have been taken in the areas of the present research case studies, but they are not coast/water related sports. Didn't notice any in first 200.
3. Sea-sports: these include pictures from any sport related to water at the coast, such as kayaking, sailing, jet-skiing, etc.
4. Coastal nature: these pictures are from any natural subjects related to the coast, such as dunes, waves, coastal flora and fauna. In some pictures there was debates if the picture is related to nature or a mixture of nature with other elements. For each picture we decided according to the vote and if we had doubts we asked opinions from other colleagues.
5. Commercial fishing: these pictures were first grouped in general theme. We decided to put all the pictures that we considered related to commercial fishing together. Later on, we categorized them according to more specific subjects including boats, fish houses, fish markets, net, seafood, seafood restaurant. The point of this categorization was to see what elements of commercial fishing have got higher level of attention from visitors. Lots of commercial boats.

6. Recreational fishing: these pictures include all the images that are related to sport fishing and recreational fishing, including charter boats, individual fishers and any similar images. In some cases, it was not easy to distinguish between commercial and recreational fishing images. Some pictures had explanations or connected to specific sites or/and persons. Those sites and persons were consulted in cases that the research group could not come to a unanimous decision.

7. Seafood: these are the pictures from any seafood, either raw or cooked. There were pictures showing people cooking their own fish at the beach, pictures from the buffet at the restaurant, and different fish after being caught on a boat or at landings, etc. We decided to put them all in the category of seafood. Mostly noted restaurants. (Re-assessment: I checked it with my colleagues and one mentioned that the pics from shrimps or some commercial boats are easy to be identified as seafood. The pics that we coded as seafood, seemed like seafood to us because of the type of fish and sometimes/mostly the explanations on the pics as the other colleague.)

8. Culture, art, music, etc.: these are the pictures that have been taken in the case study areas, and related to cultural activities, including artworks, or music at the beach. In some cases, it was difficult to decide if they belong to the personal category. However, this factor does not affect the results of the analysis for the sake of the present research.

9. Piers: this category carries a lot of pictures. In some cases, it was difficult to decide if the picture belong to the personal category, maritime heritage related or just piers. In these cases, some pictures were assigned to two categories. Some pictures from piers were looked up to see if they hold any historical and heritage significance. According to our findings, we assigned codes to them. Yep lots

10. Maritime heritage related: these categories contain all pictures related to maritime heritage and coastal cultural landscape, including maritime museums, light houses, historic boats, etc.

Appendix 4.4: Tourist Survey-- QUALTRICS ®OPENING AGREEMENT AND SURVEY

Survey of Tourists' Interest in Visiting Fishing Villages

Traditional coastal features including an active fishing industry (i.e., fishermen, vessels, and processing facilities), commercial wharfs, local crafts made from coastal resources, fresh-caught seafood, and seafood are parts of everyday life of coastal communities. Visiting these places can create a unique and authentic experience and contribute to a vibrant culture, as well as a renovation in traditional activities which help sustain the cultural communities and their occupations. Results of the study will help communities understand visitors' interests and allow them to effectively promote travel to their communities.

The questionnaire has six sections: 1) Pre-knowledge test 2) Specific places that you might consider to visit, 3) This section asks about the values that you might attribute to these places and items, 4) This section asks about the places you might consider visiting in the future, 5) Asks you about coastal places that you have visited in the past and 6) general demographic information for classification purpose only.

Information gathered in this study will be used for a doctoral research conducted at East Carolina University. This research is overseen by the ECU Institutional Review Board. Therefore, some of the IRB members or the IRB staff may need to review my research data. However, the information you provide will not be linked to you if you prefer not to. Therefore, your responses cannot be traced back to you by anyone, except for me and my supervisor. I will take precautions to ensure that anyone not authorized to see your identity will not be given that information.

If you have questions about your rights when taking part in this research, call the Office of Research Integrity & Compliance (ORIC) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, call the Director of ORIC, at 252-744-1971.

Section 1: Pre-knowledge

1. Are you familiar with any of the following items are? And have you visited any of them anywhere at the coast?

Item	Are you familiar with?		Have you visited?	
	Yes	No	Yes	No
Local seafood restaurant				
Museum				
Beach				
National registered buildings and monuments				
Seafood festivals				
Fish houses				
Commercial fishing boats				
Commercial fishing docks				
Net shop				
Boat rail				
Light house				
Nature (National Parks, wild horses, etc.)				

2. Do you think commercial fishing contributes to which of the following values? Please rank the level of importance where 5=Very important and 1=Low importance

Value	Very important 5	Important 4	Neutral 3	Low importance 2	Not at all important 1
__ Culture					
__ History					
__ Identity					
__ Economy					

Section 2: PLACES ASSOCIATED WITH COMMERCIAL FISHING FOR VISITING

Q1. Provided the information below, which of the following places are you most interested in visiting in the coastal areas of eastern North Carolina? Please give score of 1 to 5 (1 for lowest interest of visit and 5 for highest interest in visiting the place) and please briefly mention why.

1. Will you visit one of the oldest fish houses in eastern NC, Varnamtown, where you can see fishing boats coming in full of fish, fishermen and pickers are working around, and you could buy local fresh seafood? (Please see pics: 1.1, 1.2 & 1.3)

- Yes
- No

1.1



1.2



1.3



1.4. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

1.5. Please briefly explain why you are interested:

.....

2. Will you visit the only fishing net shop in eastern NC, where nets are hung in the yard and inside the shop, and workers are repairing them? (Please see pic: 2.1)

- Yes
- No

2.1



2.2. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

2.3. Please briefly explain why you are interested:

.....

3. Will you visit the only boat-rail in eastern NC (Varnamtown) and with boats getting repaired? There are several fish houses around where you could visit and buy fresh seafood too. (Please see pic: 3.1 & 3.2)

- Yes
- No

3.1

3.2



3.3. Please rank your level of interest in visiting the location above.

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

3.4. Briefly explain why you are interested:

.....

4. Will you visit one of the oldest shrimp boat still in operation anchored at a dock in Varnamtown. You could take a tour of the oldest operating shrimp boat, watching fishermen work and hearing fishing stories from the captain. (Please see pics 4.1, 4.2 & 4.3)

- Yes
- No

4.1



4.2



4.3



4.4. Please rank your level of interest in visiting the location above.

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

4.5. Please shortly explain why you are interested:

.....

5. Will you visit a beach, sitting around and watch the fishing boats in the horizon? (Pic 5.1)

- Yes
- No

5.1



5.2. Please rank your level of interest in visiting the location above.

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

5.3. Please shortly explain why you are interested:

.....

6. Will you visit the only boat yard in eastern NC (Shallotte) where two of the oldest shrimp boats can be seen. The boats are not operating any more, but there are other boats under repair. (Pic 6.1)

- Yes
- No

6.1



6.2. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

6.3. Please shortly explain why you are interested:

.....

7. Will you visit the working waterfront in Varnamtown including fishing docks with several fish houses and boats? This is one of the rare still existing traditional working waterfront in southeastern NC. (Pic 7.1)

- Yes
- No

7.1



7.2. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

7.3. Please shortly explain why you are interested:

.....

8. Will you visit one of the last two still existing fish houses in Shallotte? It is a single building with some fishing process facilities and a couple of fishing boats anchored sometimes by the dock. You could buy fresh seafood from the fish house. (Pic 8.1)

- Yes
- No

8.1



8.2. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

8.3. Please shortly explain why you are interested:

.....

9. Will you visit the other last still existing fish house in Shallotte? Fishermen bring their catch in small boats. You can always find fresh oyster here. (Pic 9.1, 9.2 & 9.3)

- Yes
- No

9.1



9.2



9.3



9.4. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

9.5. Please shortly explain why you are interested:

.....

10. Will you visit NC Maritime Museum at Southport with different exhibits of traditional fishing, World Wars, etc.? You could see fishing gears, historic photos and learn about commercial fishing. (Pic 10.1 & 10.2)

- Yes
- No

10.1



10.2



10.3. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

10.4. Please shortly explain why you are interested:

.....

11. Will you visit/eat at a seafood restaurant with fresh local seafood in Shallotte? You could also see some pictures of the area and fishing boats from the past on the walls. (Pic 11.1 & 11.2)

- Yes
- No

11.1

11.2



11.3. Please rank your level of interest in visiting the location above:

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

11.4. Please shortly explain why you are interested:

.....

12. Please take a look at the pictures below. Will you visit/eat at Old American Fish Company in Southport? This building has originally been a fish house which was transformed to a restaurant. It is a Historical Registered building and the oldest fish house in Southport.

- Yes
- No



12.2 Please rank your level of interest in visiting the location above (Picture 12.1)

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

12.3. Please shortly explain why you are interested:

.....

13. Please take a look at the pictures below. Will you visit the only still active fish house in Southport?

- Yes
- No



13.2 Please rank your level of interest in visiting the location above (Picture 13.1)

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

13.3. Please shortly explain why you are interested:

.....

14. Please take a look at the pictures below. Are you interested to visit one of the oldest fish houses in North Carolina, Holden Beach along with the shipwreck next to it?

- Yes
- No



14.2. Please rank your level of interest in visiting the location above (Pic 14.1)

- 1 – Extremely uninterested
- 2 – Uninterested
- 3 – Neutral
- 4 – Interested
- 5 – Extremely interested

14.3. Please shortly explain why you are interested:

.....

Section 3: VALUES ATTRIBUTED TO THE PLACES ASICIATED TO FISHING

Q2. Do you think any of the above mentioned places are of historical and cultural value?

- Yes
- No

2.1. From the list below indicate which words represent fishing culture and/or historically valuable?

	Representing fishing culture	Historically valuable
Fish houses	<input type="checkbox"/>	<input type="checkbox"/>
Seafood Restaurant	<input type="checkbox"/>	<input type="checkbox"/>
Boats	<input type="checkbox"/>	<input type="checkbox"/>
Boatyards	<input type="checkbox"/>	<input type="checkbox"/>
Boat rail	<input type="checkbox"/>	<input type="checkbox"/>
Net shop	<input type="checkbox"/>	<input type="checkbox"/>
Museum	<input type="checkbox"/>	<input type="checkbox"/>

Section 4: LIKELIHOOD OF VISING DIFFERENT PLACES

Q3. If you go to a trip to the southeastern NC, which ones of the following places would you like to visit? Please give 5 to the one that you visit most likely and 1 to the one that you wouldn't visit at all.)

Item	Likelihood of visit				
	1 – Extremely unlikely	2 – Unlikely	3 – Neutral	4 – Likely	5 – Extremely likely
Local seafood restaurant					
Museum					
Beach					
National registered buildings and monuments					
Seafood festivals					
Fish houses					
Fishing boats					
Fishing docks					
Net shop					
Boat rail					
Light house					
Nature (National Parks, wild horses, etc.)					

Section 5: PAST VISITS TO THE COASTS

Q.4. Which one of the following places have you visited (anywhere at the coast), please mark under the 'visited', and indicate the quality of your visiting experience (5= Very positive and 1= Very negative) If you haven't visited, please chose 0?

Item	Level of visit satisfaction					
	0- Not Visited	1 – Very negative	2 – Negative	3 – Neutral	4 – Positive	5 – Very positive
Local seafood restaurant						
Museum						
Beach						
National registered buildings and monuments						
Seafood festivals						
Fish houses						
Commercial fishing boats						
Commercial fishing docks						
Net shop						
Boat rail						
Light house						
Nature (National Parks, wild horses, etc.)						

Section 6: DEMOGRAPHIC INFORMATION FOR DESCRIPTIVE PURPOSES ONLY

Q5. Personal details:

5.1. What is your gender? Please mark **_ one.** Female Male

5.2. What is your ZIP code? _____zip

5.3. What year were you born? _____ (e.g., 1966)

5.4. What is your highest level of education? **Please mark _ one.**

Some high school

High school degree

Some college

Associate degree, 2-year college

College degree, 4-year college

Advance degree (e.g., MBA, MS)

Appendix 4.5: IRB Approval—Amendment for Tourist Survey



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · www.ecu.edu/irb

Notification of Amendment Approval

From: Social/Behavioral IRB
To: [Sorna Khakzad](#)
CC: [Lynn Harris](#)
Date: 4/12/2016
Re: [Ame1_UMCIRB 14-001500](#)
[UMCIRB 14-001500](#)
Valorization of Coastal Cultural Heritage

Your Amendment has been reviewed and approved using expedited review for the period of 4/11/2016 to 2/9/2017 . It was the determination of the UMCIRB Chairperson (or designee) that this revision does not impact the overall risk/benefit ratio of the study and is appropriate for the population and procedures proposed.

Please note that any further changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. A continuing or final review must be submitted to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Document	Description
Survey tourist IRB(0.01)	Surveys and Questionnaires

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

Appendix 4.6: Explanatory analysis of interest in visiting specific sites

1. Beacon Seafood:

Five people mentioned that they do not like to visit Beacon Seafood. Two respondents changed their response to “a little” after seeing the pictures and reading the information. One stated that although he wouldn’t like to visit due to the bad smell, but he appreciates the cultural relevance. The other one mentioned that although he likes seafood, fish house is not a first choice to visit and that fish houses are not exciting.

2. Net shop:

Seven respondents mentioned they are not interested in visiting the net shop. Three of them stated that since they do not fish they are not interested. Three others stated that they are not interested in visiting, but after receiving the information they changed their answer. One stated that he thinks there is not much to see. One said a little interested, but he did not have much knowledge and information about it. Another mentioned he is not sure nets are enough to interest him. He asked if the shop is near any other attractions that are stated in this survey. He mentioned that so much of this has to do with location.

3. Boat rail:

Seven people stated no interest in visiting the boat rail. One stated that he is not interested in fishing and anything related to it. Another one mentioned that he doesn’t have a boat and do not see the relevance to go and visit. One person mentioned that it is not fascinating and it looks like any construction sites. He stated that it doesn’t offer a lot about history or culture. However, it could be interesting to those who’ve never had to hang around one before. Another similar answer mentioned that it seems very cold and technical. Someone mentioned it looks empty of people and a little run down. One person, who mentioned he is not interested, related it to seafood which shows his lack of knowledge about boat rail. Three people mentioned they are not interested to visit first, but then they changed their mind. Two respondents stated that since they do not know much about boat rails, are not interested in visiting the boat rail.

4. One of the oldest shrimpers

Two respondents mentioned they are not interested in visiting one of the oldest shrimpers. Two others first mentioned they are not interested and after seeing the pictures and reading the information changed their mind. One mentioned he is interested in visiting, but not as tourist. He stated that he is interested in fishermen's lifestyle and culture, but does not want to visit as a tourist. He also added that being the 'oldest' is not attractive for him because American history is not so long and has been built against the nature. One person stated that maybe providing more info and better pictures would entice his interest. But generally he is not interested in shrimp fishing stories.

5. Shrimp boat in action:

Two respondents are not interested in the mentioned scenario. One reason was that they do not want to be in the water with boats. Four mentioned they are little interested in the scenario. One stated that he would not go to the beach for the sole purpose of watching boats. One person is not interested in beached at all. One person mentioned that watching commercial vessels go by, while I am sitting on the beach does not sound very appealing, and another mentioned it would disturb the ocean view. One person mentioned that it is not a new topic.

6. Boatyard in Shallotte:

13 people stated they are not interested in visiting this site. Several reasons were highlight; the site is not aesthetically appealing; it is nothing new; it is dry and technical and merely immobile and currently unused tools of the industry and there is not much to do. One mentioned that they rather seeing the boats in/near water. It seems the photos and explanations were not informative enough. Another mentioned that there is a lack of personal interaction with the fishing industry. It was stated that there is no social element, or the industry function, and it seems like an immobile and currently unused industry. Two respondents were interested to visit the site, but not for touristy purposes, but due to their professional interest.

7. Varnamtown working waterfront

Four of the respondents stated that they are not interested in visiting Varnamtown Working Waterfront. One stated that he has never been fishing and he has no idea what to do there. It shows that besides fishing, they cannot relate any other activities with this site. Two mentioned that it is nothing new and look similar to many other places. And another person stated that it feels like a work-yard by the sea which is not interesting. One person stated he is a little interested and if he is in the area might stop by. Another person was interested in fishermen life style and culture, but would not visit such places as a tourist because they do not have much to offer.

8. Holden Seafood:

13 respondents stated that they are not interested to visit Holden seafood. One mentioned he likes seafood, but this location is out of his way. One mentioned there is not a lot to do. Another mentioned it is nothing new. One respondent does not like the smell of fish. One stated that if there is a reason to visit is buying seafood, but they can buy from any other market as well. One mentioned although would like to visit, but not as tourist.

9. Lloyd's Oyster house:

12 respondents stated that they wouldn't visit this location. Four of them specified that they don't like seafood; oyster or/and fish. One person who was not a fan of seafood, mentioned that he might consider visiting because there might be other things to do and see.

10. Southport Maritime Museum:

One respondent stated he wouldn't visit this place without any explanation.

11. Inlet View restaurant

After seeing the pictures one was moderately interested despite the fact that this place is a bit far for him to reach. Someone stated that he wouldn't go out of his way to visit a particular restaurant. His question was what in its vicinity is. One person does not like seafood.

12. Old American Fish Company:

Three people mentioned they are not interested in visiting the place. One person who first was not interested, changed his mind to moderately after seeing the picture and reading the info.

13. Tatum Fish house:

Five respondents stated they are not interested to visit this place. Four respondents stated they wouldn't go, though they are a little interested. Their reasons were the distance; lack of knowledge about fish houses; and no interest in seafood.

14. Old fish house and shipwreck

Eight respondents stated that they are not interested in visiting this site without stating any reasons. One person was interested to take picture and nothing more.

Chapter 5: Conclusion and future vision

Generally, there is no doubt about the social, cultural and economic values of cultural heritage either on land, underwater or in the coastal areas. Many coastal areas contain large amounts of historical and archaeological remains, and are vivid evidences of human history, culture and traditions which shape our cultural heritage. Coastal areas are one of the most dynamic areas with high levels of development, which is under the constant impact of natural and anthropogenic factors. These factors can also impact coastal cultural heritage. In addition, due to social, cultural, economic and political context, different types of cultural heritage receive different level of attention. Therefore, sometimes the values of certain cultural heritage assets are overlooked in management plans, and thus those cultural heritage assets are marginalized. Marginalizing cultural heritage not only adversely affects preservation and protection of heritage and history, but also results in loss of cultural resources that can be of social, cultural, and economic values in management plans. For recognizing the different values of cultural heritage, a better communication strategy among different sectors such as researchers, stakeholders, authorities, local people and public is essential. In addition, raising awareness and identifying gaps in our understanding about different aspects of coastal cultural heritage highlights the potentials of cultural heritage as a valuable resource in management of coastal areas.

5.1. Conclusions from the case study

Present research recognized that in the coastal areas there are several categories of cultural heritage that have been marginalized, although they can be of values in economic development and social stability of the local people. The present study focused on Brunswick County in North Carolina, where there is a wealth of cultural resources available.

As presented in the Chapter 2, Native American's sites, Afro-American heritage, fishing cultural heritage and variety of other prehistoric and historic sites comprise a culturally rich area, which still has the potential to preserve and benefit from its heritage. Chapter 2 presented cultural heritage sites based on the data accumulated through the Office of State Archaeology and State Preservation Office, in addition to archival studies and site visits. Several natural and anthropogenic factors including storms, sea-level

rise, flood and hurricane, and urban development are threatening factors in coastal areas of North Carolina. Through synthesizing data, the present study provided risk maps for different factors. These risk maps highlight the areas that are more at risk of flood in short term, might be suffering from the impact of sea-level rise in long term, and the probability of being in the hurricanes zones. The nature of data that was used for each analysis was different. The flood hazard data which were acquired from FEMA was basically used for estimation of cost of damage for insurance company. Storm surge data is considered to be outdated and new data could be collected and interpreted through modern technology, and interpreted in a more accurate way. In addition, interpretation of this data for assessing the probable risk of flood and storm surge on cultural properties only can provide a very basic understanding on the locality of the cultural sites in relation to different level of flood hazard. In addition, for a proper mitigation and protection of cultural properties, it is necessary to have a complete understanding of the nature of the cultural properties, their state of preservation, their susceptibility to salt and fresh water penetration, their materials and structure. Sea-level rise data are debatable as well, as they are scenarios based on the existing data. Based on the existing data, Cape Fear area revealed to be one of the most areas prone to the sea-level changes. According to the risk maps, several culturally significant cultural heritage sites on Bald Head Island and surrounding areas are threatened by sea-level rise in long term. The concern about sea level rise is multifaceted due to the fact that it will cause salt water penetration into different sites and material, and causes unpredictable changes in the environment. Hurricane data only show the historical and past hurricanes. No hurricane prediction map was found for the present research. More studies on the changes in the categories of hurricane and possible prediction scenarios can help cultural heritage managers to create mitigation plans for hurricane.

The risk maps can be a practical way to guide managers (and other potential stakeholders) toward envisioning strategies and plans that preserve cultural heritage resources either through relocation of the sites, adaptation strategies, or in situ mitigation and protection policies. As previously mentioned, for such plans and strategies, accurate data on the state of cultural resources, their preservation and their level of social and cultural significance is necessary. In other word, before such data about each site and building, no site-specific mitigation or adaptation strategies could be recommended. For example, even for an important site such as Bald Head Island lighthouse thorough damage assessment does not exist. The

existing risk maps are the first steps that can only reveal what sites are threatened by natural-environmental factors, and show the level of severity of those factors, not the level of impact on cultural properties. Level of impact on cultural properties can only be measured and predicted through evaluation and damage assessment of each site and building individually. For example sites such as Hatteras Island Lighthouse benefited from a great amount of information regarding its values to public, a well-studied state of preservation and high level of scientific data on natural and environmental condition. However, for sites such as the Creek Boathouse or fishing heritage sites, the present knowledge about their cultural values and states of preservation are enough. Awareness about these issues, in addition to the factors that impacting them and highlighted through risk maps, can help managers and policy makers to create better strategies for future preservation efforts.

Additionally, this chapter concluded that development has been one major factor in alteration of the coastal areas setting where many historic and prehistoric archaeological sites have been reported. Chapter 2 concludes that current data can provide a general idea of what is happening to the coastal cultural heritage in Brunswick County. However, more accurate data about the cultural heritage assets, natural factors such as erosion, and social behavior, and sociocultural and socioeconomic values of cultural heritage are essential for making better policies for preservation of cultural resources with the aim benefiting local people and sustaining local communities.

Fishing cultural heritage is one of the marginalized cultural heritage assets that have been given more attention in management in recent decades. Commercial fishing has been a traditional activity and with its material culture has shaped a major part of the maritime cultural landscape in Brunswick County. The studies showed that although fishing has been in decline, still commercial fishing is important for local communities in Brunswick County in many respects. In Chapter 3 the results from re-evaluation of fishing heritage and its role in promoting a sense of place have been presented. The study showed that fishing is not only important for local people in respect to economic benefits, but also the members of fishing communities associate fishing with their sense of place and identity. The study concluded that fishing material culture (fishing cultural heritage) is significant for fishing communities regarding shaping their sociocultural memory, and place attachment. Therefore, the study proposed that these cultural heritage

assets should be capitalized for economic development and benefit in fishing communities. The study proposed that preservation of fishing cultural heritage and possible registration of this heritage as historic landmark and/or serial nomination can open new doors for raising awareness about local communities, as well as promoting cultural tourism that can result in benefiting local communities in terms of economic development, as well as sociocultural stability.

In order to examine the proposal in Chapter 3 regarding promoting fishing cultural tourism, in Chapter 4, the suitability of applying the concept of cultural tourism on fishing communities in Brunswick County was investigated. The results show that there is considerable interest in tourists to visit fishing cultural heritage sites. However, there is not much information provided to the visitors through the tourism centers. The study highlighted that having more knowledge about cultural sites can promote these sites as tourist attraction and increase the likeliness of visiting these attractions. In addition, considering the value of fishing tradition in local communities and the general interest in tourists for exploring more authentic places, the study suggested that revitalization and preservation of a tradition can be a motive for promoting ethnic tourism on fishing communities. The study acknowledged the negative impact of tourism on traditional communities, and suggested that a cultural tourism that directed towards understanding of the local communities, their traditions and respecting their values can be achieved through more awareness rising about sociocultural values of fishing communities.

5.2. General conclusion

The example from Brunswick County showed that coastal cultural heritage can play a significant role in local communities' wellbeing, promoting tourism, and economic development. Brunswick County is just one example of fishing communities, and just one example of marginalized coastal cultural heritage. This example can be expanded for conducting more interdisciplinary studies on marginalized cultural-traditional groups and their cultural heritage. Re-evaluation of cultural assets can open new ideas about resources that can be used for the benefit of people. This evaluation, however, needs to be adapted according to the natural-environmental, social, economic and political conditions of each case. As it can be learned from this study, natural-environmental factors can vary from one location to the other; social setting and social values are different among different groups of people, depending on their history,

education and background; economic situations also can vary in different levels, among families, communities and in general in respect to the region, city or country. Political dimension, which determines many rules regarding protection and preservation of heritage plays a great role as well. However, presenting scientific evidences is one of the ways that can promote agreeable policies for expanding preservation and protection of cultural heritage. Evidences that demonstrate the role that cultural heritage preservation can play in economic development and social stability can promote policies for preservation of certain cultural resources that might have been marginalized.

The present study suggested a few methods for re-evaluating coastal cultural heritage of local communities. The results show that there are potentials in using coastal cultural heritage as resources in coastal management plans. Although different cases might require different approaches, interdisciplinary studies and evaluation of cultural resources can reveal that cultural heritage is not just a luxurious amenity, but is a crucial resource that needs more exploration.

Synthesizing the current data showed that the extent of availability of data varies from location to location, and also from discipline to discipline. However, many projects can start with accumulating the existing data and identifying the gaps in data. The extent of available data is incredible, although not all data have been collected for achieving the same goals. Communication among different disciplines can help to identify what data is missing for better evaluation of resources and improving coastal management plans.

Overall, a balanced integrated and interdisciplinary evaluation of different resources can enhance our understanding of the socio-environmental factors impacting our coastal areas. Passing this understanding to managers and policy makers will help to improve future planning aimed at sustainable development. In terms of policy making, the author acknowledges that making better decisions requires concrete evidence that demonstrates how understanding of incorporating cultural capital and ecosystem service can lead to outcomes that improve human well-being in the short and long term. This evidence should combine environmental, cultural, economic, and social data.

5.3. Future visions

Much work still remains to be done because of the relatively recent acknowledgement of the presence and significance of coastal cultural heritage, the special dynamic condition of the coastal areas, and the existence of numerous conflicting interests. This study recognizes the necessity of applying an interdisciplinary approach in management of coastal areas in order to highlight the values of coastal cultural heritage as a resource in the management schemes. Although the present study showed the necessity of crossing traditional boundaries between academic disciplines or schools of thought, and several areas of expertise were touched, new needs for stronger and more defined collaboration among different disciplines and the cultural heritage field exist.

This single study was a combined understanding of cultural heritage values, social science, geological science, tourism and policies: a study that could have not been conducted just through understanding of the cultural, historical and archaeological values of coastal cultural heritage. Understanding of all these aspects requires close collaboration of experts from different disciplines—in this case benefiting from the knowledge of professors, colleagues and students from different fields—in addition to having interdisciplinary research skills that would have not been possible without being trained in an interdisciplinary program. Hence, the author's vision for future is a better use of and management of coastal cultural heritage through scientific collaboration of multiple, but related, disciplines and promoting more interdisciplinary training for a new generation of students.

The author's vision for the future is that all cultural resources in the coastal areas receive adequate attention for study and evaluation, and that decisions would be made based on scientific facts. As a result, coastal cultural heritage can be regarded more as a resource in management plans and can promote sustainable development and growth of the blue economy, cultural tourism, and enhancement of preservation of coastal cultural heritage and societal values therein.

The author has been fortunate to be part of several interdisciplinary projects such as SPLASHCOST and SeArch and had the opportunity to examine interdisciplinary approaches. Her path, directed her towards a postdoctoral research associate position at the University of West Florida and Florida Public Archaeology Network, where she will conduct researches on evaluation of coastal cultural heritage, cultural tourism

facilities and outreach in order to promote policies for preservation of coastal cultural heritage in the future in Florida, with a national and international vision. Being on a steady, progressing path is a proof of eligibility of an approach.

5.4. Suggested future work

The research highlighted the following relevant knowledge gaps along with further promising research directions that can be conducted in masters, doctoral, post-doctoral and professional levels:

On a general scale, more study on potentials of interdisciplinary research and collaboration is recommended. The principals of interdisciplinary work are not still well-established. The theoretical background of interdisciplinary methods need to be understood in more a practical way, especially regarding coastal cultural heritage.

The present study which touched disciplines such as social sciences, geology and geomorphology, tourism, and heritage preservation highlighted that even in order to conduct a dissertation in an interdisciplinary way, not only the knowledge from different disciplines is required, but also a close collaboration among experts is necessary to be able to call a research “interdisciplinary.” Therefore, one suggestion for programs such as Coastal Resources Management, which advocates interdisciplinary methods, is to encourage more collaborative and group research among the students of their program.

More specific topics of research that can be initiated as the result of the present study are conducting site-specific research on coastal cultural heritage in Brunswick County. For cultural and archaeological related field, there is still an abundance of sites to study and survey such as historic fish houses and fishing boats, especially in Holden Beach and Varnamtown. Along with more ethnographic studies on fishing communities, the results of such studies can help different stakeholders to understand the significance of commercial fishing in the present life of local communities, as well for future generations.

Geoarchaeological studies on Native American sites along the shorelines, on historical shipwrecks and buildings underwater and along the shorelines can help to better understand not only to our history, but also the changes in the environment, sea-level rise, erosion, and so forth. Sites that were highlighted valuable for further studying in Brunswick County are the Creek Boat House and the Baldhead

Lighthouse on Baldhead Island, fishing maritime landscape in Varnamtown and Holden Beach, many Native Americans sites along the shorelines, and Old Brunswick Town.

Pertaining to natural factors, this study briefly touched the fact that biological and ecological factors are also impacting factors on coastal cultural heritage in Brunswick County. Several studies on the impact of changes in the habitat (marshes, forests, etc.) on cultural landscape as well as individual sites and buildings can be conducted. One specific site is the Creek Boathouse on Baldhead Island that has been affected by growing marshes and changes in the creek direction.

A combination of geomorphological studies and anthropological studies on the impact of inlet's formation and changes, and river dredging on local fishermen's lives and activities is another topic that can enhance our understanding of the different fishing communities, especially in Shallotte.

In the end, it is recommended that coastal cultural heritage researchers and archaeologists not only focus on safeguarding and preserving cultural heritage through a single sector, but also look into more collaborative research and projects with different disciplines and experts. The case of North Carolina Heritage at Risk project is a good example of such projects that should be promoted. These projects and studies should aim not only to preserve and protect cultural heritage for the sake of cultural heritage preservation, but also for the sake of people's benefit and wellbeing. It is important to remember the fact that cultural heritage, unlike many other resources, is a capital that if preserved, will gain more value by the passage of time, without much investment.

